Outcast no longer Apple's latest OS means managing Macs is no longer an isolated event. PAGE 10.

VoIP taking its time VocalTec CEO Elon Ganor explains why the uptake of VoIP has been slow. PAGE 39.

NetworkWorld

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EARLY ADOPTERS

How organizations are exploiting the latest network technologies.

Not everyone is lying low, waiting for the economy to turn around. Plenty of companies are embracing technologies such as IP telephony, wireless LANs, optical networks and Web services in an effort to emerge stronger than ever — and stronger than more-conservative competitors — when the rebound comes. Find out how these innovators are cutting costs, smoothing operations, better serving customers and enabling new business opportunities.

10G or not 10G?

That is the question regarding high-speed switch products.

■ BY PHIL HOCHMUTH

If you're looking to add 10 Gigabit Ethernet to your corporate backbone, you might want to wait for the next generation of switches from vendors such as Cisco, Extreme Networks and Foundry Networks to ensure you're getting the most bang for your buck.

That's because most existing Ethernet boxes have a kink: they really only deliver 8G bit/sec. Vendors will make up for that speed with next-generation chassis upgrades — which could come as early as next year.

Although some currently offer 10G Ethernet modules, "most vendors are using switch chassis that were designed three or four years ago to support Gigabit Ethernet," says David Newman, president of Network Test, an independent network equipment test lab and a member of Network World's Global Test Alliance.

"Different boxes are designed in different ways . . . but the most bandwidth many of these products can offer is 8G bit/sec of capacity" at best, he says. Newman adds that this limitation is because most chassis were designed with 8G bit/sec interfaces between module slots and the chassis' switching fabric.

Another industry watcher says even 8G bit/sec is generous. Bad implementations of features such as flow control, which regulates

See 10G, page 16

Alcatel switches stack up

'Virtual chassis' offerings boast failover, flexibility.

■ BY PHIL HOCHMUTH

CALABASAS, CALIF — Alcatel this month is scheduled to start offering stackable 10/100M bit/sec Ethernet switches that pack much of the punch of enterprise chassis-based boxes.

Alcatel lags behind 3Com, Cisco and Nortel in getting into the "virtual chassis" switch market, but at the same time leapfrogs them

See Alcatel, page 14

MasterCard factors 9/11 into disaster-recovery plan

■ BY ELLEN MESSMER

O'FALLON, MO. — MasterCard International, which last year opened a gleaming $160 million data-processing campus in Missouri, is gearing up for its next challenge: building a back-up and disaster-recovery site designed for the age of terrorism.

The card-processing giant currently maintains a back-up operation at an unspecified Long Island, N.Y., location, but the Sept. 11 terrorist attacks last year on the World Trade Center spurred MasterCard to rethink its disaster-recovery plans. And a factor it had to take into account is that the Federal Reserve and the Securities and Exchange Commission are pushing for new rules that, among other things, would mandate a two-hour recovery time for financial services companies' systems.

MasterCard's Artie Ahrens is bulking up the credit giant's back-up plans.

MasterCard, which processes about $1 trillion annually over its global BankNet VPN, likely will build its new back-up facility about 300 miles from the new data-processing center — the minimum distance the federal government wants to

See MasterCard, page 14

"Can the servers han

Anything can happen to your infrastructure. Make sure it scales. Today's business world is a roller coaster ride of ups, downs, and complete unknowns, and the companies that adapt to this climate are the companies that will thrive. In this kind of environment, where _____ can happen at any moment, it is increasingly important that your infrastructure provides the headroom and ability to increase or decrease capacity as necessary almost instantly. Here's how the Microsoft® platform can help you get there:

Scalability world records and price-performance leadership

The Windows® Server family holds the world performance records in the TPC-C and TPC-W benchmarks, which measure transactions per minute, and Web interactions processed per second, respectively. In TPC-C price-performance benchmarks of clustered solutions, Microsoft has the top four results, and six of the top ten. In tests of non-clustered systems, Microsoft solutions earned the top ten spots in price-performance. In a head-to-head comparison of the best non-clustered results on Windows Server/SQL Server 2000 Enterprise Edition and the best Sun Microsystems result, the Microsoft solution topped Sun in performance by 360 percent, at a cost-per-transaction that is 42 percent lower.*

Scaling up: Getting the superior performance you need

Today, many companies have accumulated large quantities of servers, due to new applications, growing data requirements, and through mergers and acquisitions. Consolidating these large numbers of servers onto fewer servers (known as "scaling up") can help reduce the time and effort needed to manage the servers while increasing performance. Also, many of today's most popular ERP, CRM, and business intelligence applications are architected to perform best on a "scale-up," single image server. Microsoft Windows 2000 Datacenter Server and SQL Server 2000 Enterprise Edition are designed to efficiently utilize hardware resources within a single image, and can scale-up to 32 processors and 32 GB of memory. All of which means that if you need to consolidate your workload or deploy large databases, the Microsoft platform can deliver.

*Results from the Transaction Processing Performance Council (www.tpc.org) as of 10/22/02. Comparison of Microsoft Windows .NET Server 2003 Datacenter Edition and SQL Server 2000 Enterprise Edition versus Sun Microsystems based on the following two results: NEC TX7/i9510, 308621 tpmC, 14.96 $/tpmC

ndle that?”

Scaling out: Adding capacity when you need it, where you need it

With today's unpredictable business climate, your computing capacity requirements can change quickly and dramatically. Distributing the computing workload among multiple servers, with the ability to add or subtract servers to increase or decrease capacity, helps you optimize your resources. “Scale out” scenarios are typically ones in which applications are architected for distributed processing, such as Web infrastructure and application servers. The Microsoft platform supports both clustering and network load balancing (NLB), and Windows 2000 Advanced Server can support up to 32 servers in NLB scenarios. In addition, with Application Center 2000 you can manage a farm of servers as one server, simplify your management processes, and enable a reduction in complexity. So if you need a flexible, scalable environment, the Microsoft platform is ready.

*“**JetBlue** is using the Microsoft Server Platform to enable hardware consolidation, achieve better price-performance, decrease IT support costs, and reduce application development time. The scalability of our Microsoft-based infrastructure gives us the confidence that we are ready to handle today's usage spikes as well as future growth.”*

—Jeff Cohen, Vice President & CIO, JetBlue Airways

For a Server Consolidation Kit, webcasts, and other information that can help you get your infrastructure scalable enough for _____, visit microsoft.com/enterprise/scalability Software for the Agile Business.

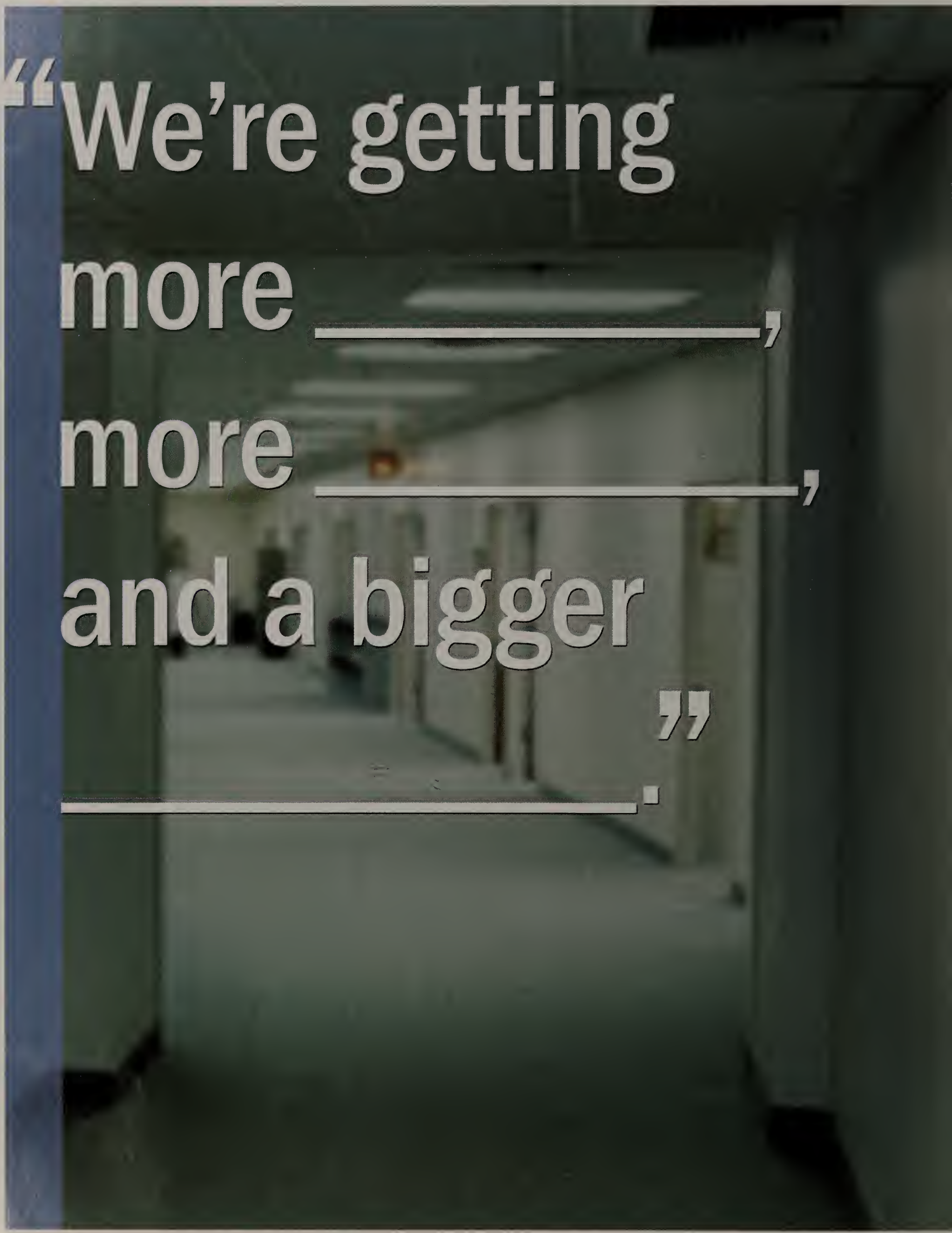
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ILLUSTRATION BY MICHAEL MILLER

SPECIAL REPORT

EARLY ADOPTERS

How organizations are exploiting the latest network technologies.

Not everyone is lying low, waiting for the economy to turn around. Plenty of companies are embracing technologies such as IP telephony, wireless LANs, optical networks and Web services in an effort to emerge stronger than ever — and stronger than more conservative competitors — when the rebound comes.

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Seminars and Events

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Columnists

Compendium
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Columnist Jeff Zbar examines an audit team that found a new corporate home, with flexible work arrangements intact, post-Enron. **DocFinder: 3344**

The Bleeding Edge
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News Bits

Experts flag security flaw in Solaris

■ A vulnerability in Solaris puts systems running the Sun operating system at risk of being taken over by an attacker, experts warned last week. A buffer overflow flaw lies in Sun's implementation of the X Windows Font Service, which serves font files to clients and runs by default on all versions of Solaris, according to advisories that Internet Security Systems and CERT/Coordination Center issued. By formulating a specific XFS query, remote attackers could crash the service or run arbitrary code with the privileges of the "nobody user." This privilege level is limited and similar to that of a normal user. But after gaining access an attacker could use privilege escalation flaws to attain root status, the highest privilege level, ISS said. Sun told ISS and the CERT/CC that it is working on a software update. Meanwhile, ISS advises users to disable XFS unless it is required and to investigate firewall settings. (See story on Sun releasing Solaris 9 for Intel-based servers and workstations, page 13.)

Siebel's comment to prove costly

■ The Securities and Exchange Commission last week took its first enforcement actions under a fair disclosure rule enacted in 2000, citing Siebel Systems for violations. On Nov. 5, 2001, Siebel CEO Tom Siebel told attendees at an invitation-only Goldman Sachs conference that he was optimistic because Siebel's business was returning to normal. That was in contrast to his statements three weeks earlier that the IT market was tough and the company expected to face that climate for the rest of the year, according to the SEC. Siebel's cheery remarks, to which most investors had no access, pushed Siebel's share price up about 20% higher than the previous day's close. Regulation full disclosure bars companies from selectively disclosing material information before releasing the information publicly. The SEC has filed a cease-and-desist order against Siebel. It also has sought in federal court a $250,000 fine for the infraction, a penalty to which Siebel has agreed, according to the SEC. The commission also took action against Raytheon and its CFO, Franklyn Caine, and Secure Computing and its CEO, John McNulty, for similar violations.

Hitachi, Network Appliance offer gateway

■ Storage vendor Hitachi Data Systems is expected to announce this week that it has partnered with Network Appliance to create a storage-area network/network-attached storage gateway for enterprise customers who want to view block-level data on the Hitachi Lightning 9900 Series arrays from a file-oriented Network Appliance file server. Hitachi's fortunes have improved in the past year. According to AG Edwards, at the end of the third quarter, Hitachi had overtaken EMC in the high-end RAID market with a 38.7% market share compared to EMC's 37.8% slice.

Senators tout new broadband legislation

■ A bill expected to be introduced in the U.S. Senate early next year is being promoted to encourage the expansion of broadband Internet access by making more broadcast spectrum available to devices that incorporate new technologies such as wireless LAN connectivity. Sen. Barbara Boxer (D-Calif.) and Sen. George Allen (R-Va.) are spearheading the effort.

The Boxer-Allen proposal would require the Federal Communications Commission to make more broadcast spectrum available to devices that incorporate new technologies. The bill also would require the FCC to develop guidelines for the expanded portion of the broadcast spectrum that these devices would use, to avoid signal congestion and interference. Current regulations limit wireless LANs and similar technologies to a small portion of the spectrum, which in turn limits their development, Boxer said. Another goal of Boxer and Allen's legislation is to give people in rural communities new ways of accessing the Internet.

AOL prepares to take on Outlook

■ AOL is developing a stand-alone e-mail client with integrated instant-messaging software, presumably aimed at competing with Microsoft's Outlook application. Dubbed AOL Communicator, the software is targeted at heavy users of AOL's Instant Messenger and advanced e-mail users, an AOL spokeswoman confirmed last week. Communicator is in the early beta-testing phase, and it is too early to say what features the product will have or when it will be released, the company said. AOL's move into the stand-alone e-mail market could enable it to hit three birds with one stone — letting the Internet giant grab more corporate users, diversify its revenue stream and nip at one of rival Microsoft's strongholds. The ISP recently launched a corporate instant-messaging product, just as Microsoft was preparing to unveil its own.

■ TheGoodTheBadTheUgly

E-comm growth spurt. U.S. online retail sales in the third quarter jumped 34.3%, representing the largest year-over-year gain since the first quarter of 2001, according to the U.S. Commerce Department. The $11 billion in receipts represented 1.3% of total retail sales, up from 1.1% the year before.

Worst year ever. The worldwide IT industry suffered its largest decline ever in 2002, with revenue falling 2.3% from the previous year, according to IDC. Major contributors to the decline included a drop-off in computer systems sales, network equipment and professional services. However, IDC expects the $875 billion dollar IT industry to recover, with a growth rate of more than 5% next year.

Piracy doesn't pay. A 52-year-old Taiwanese woman who pleaded no contest in one of the largest software piracy cases in U.S. history has been sentenced to nine years in prison. Lisa Chen was arrested along with three associates in November 2001 after local sheriffs seized hundreds of thousands of copies of pirated software worth between $75 million and $98 million that Chen and her associates were believed to have smuggled into the country from Taiwan. Microsoft's, Symantec's and other vendors' software was involved. ➤

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New OS creating Macintosh converts

Unix-based Mac OS X 10.2 offers network executives more familiar administrative tools.

■ BY DENI CONNOR

Macintosh servers and workstations might no longer be the black sheeps of network and systems management.

The reason, IT executives say, is that a new version of Apple's Unix-based operating system — Macintosh OS X 10.2 — is giving them the long-sought-after tools to bring these machines into the management nuclear family.

"Macs and management. Have you ever heard the expression 'like herding cats'?" asks Shane Wilson, coordinator of network services at Centre College in Danville, Ky. "Macs have always been this way."

The advent of Mac OS X 10.2, however, is changing that attitude. Network managers who formerly managed Macs with proprietary software and hardware can now use some of the same software they used for their Intel- or RISC-based servers and workstations to manage Macs. Mac OS X for the first time really supports standards-based enterprise qualities such as security, protocols and tools, which make management easier.

Familiar tools

The Mac OS X (pronounced OS 10) supports many of the same applications and command-line tools that IT managers use to configure, install and manage Windows, Linux and Unix machines.

"Macs and management. Have you ever heard the expression 'like herding cats'? Macs have always been this way."

Shane Wilson
Coordinator of network services, Centre College

That's possible because OS X, unlike OS 9, is built on FreeBSD, an open source operating system for Intel, Alpha and PowerPC-based servers that is based on BSD Unix, an implementation of Unix developed at the University of California, Berkeley.

"The deployment of Mac OS X is the primary reason for the sudden attraction of Macs at our organization," says David Bratt, technology architect for H. Lee Moffitt Cancer Center in Tampa, Fla. "The researchers with Unix workstations like it because it is basically FreeBSD with a [Windows-like graphical] interface. Now that we have the quasi-Unix look and feel with Mac OS X, we have several options for managing Macs."

The newest version of the Macintosh operating system is causing network executives to re-examine long-held assumptions.

"We are currently looking at our future and determining where Macs will fit and how we'll support them," Bratt says. He says Macs are being installed more often in Moffitt's research division, where they are used for computationally intense bioinformatic applications that are often written for Linux or Macintosh servers and workstations.

Bratt has a mixed network with Linux and Windows NT servers and one Apple Xserve server, and an assortment of 900 client workstations that he backs up with Veritas Software's NetBackup. More than 100 of his workstations are Macs. Bratt's IT staff also uses an inexpensive shareware product from Famatech, called Remote Administrator, to remotely manage and install software on the company's Windows, Macintosh and Linux workstations. Remote Administrator starts at $35.

"Mac OS X has all the communications and network/systems management tools BSD Unix has, so it can integrate quite tightly into a TCP/IP network," says Dan Kuznetsky, research director for IDC.

Another user says that remotely managing Mac servers and workstations is much easier now that he has upgraded his Macintosh workstations to Mac OS X from OS 9.

"Most of our workstations are now running OS X, so we do more remote maintenance on those systems than we did with OS 9," says Tim Price, IT specialist for Architectural Research Consultants in Albuquerque, N.M.

Price has a mix of Windows, Linux and Mac servers and workstations in his network that run open source MySQL and PostgreSQL databases.

As the boundaries of manageability have been stretched with Mac OS X, Macintosh users have for a long time been able to store files and share printing on NetWare, NT and Unix networks. They've been able to be backed up with the same software that works with other operating systems and to access applications running on these operating systems with products such as Samba or Citrix's MetaFrame terminal services software.

Casey Riddell has used Macs, Windows and Solaris workstations with business-critical applications for the last six months.

"I have a Citrix server for the Macs to get all of their needed applications such as [enterprise resource planning] and proprietary applications [from Windows]," says Riddell, network systems administrator for Anchor Group, an apparel manufacturer in Sacramento, Calif.

Riddell uses the Mapics ERP application with Windows and Macintosh clients. He explains that even though he has not always been a fan of Macs in his network, he is softening with the advent of Mac OS X.

"Recently with Apple's OS X, I have completely changed my stance, and I am seriously considering the new XServe servers for a few minor Web projects," Riddell says.

Back-up tools and applications aside, the management tools Apple offers for managing Macs in heterogeneous environments have been limited. However, IT managers now can rely on familiar command-line utilities and applications such as FTP, which lets IT managers transfer files, patches or applications from one machine to another.

Growing security

Mac OS X also supports Remote Login, a command-line utility that uses a Telnet connection or Secure Shell (SSH) for authentication and lets IT managers log on to a workstation or server as if it were a local machine. The SSH utility, which incorporates Secure Sockets Layer, also lets them distribute Unix scripts or run Apple's NetBoot or Network Install to remotely boot PCs or distribute software to client workstations.

For authentication and encryption, Mac OS X supports Windows Active directory and uses Windows password authentication, and Kerberos, letting IT managers securely manage remote Mac desktops as clients on Windows networks. In addition, Apple recently added a journaling file system to Mac OS X, which allows larger file sizes and increases in performance.

The possibilities for management don't stop with file transfer and identity management, Apple says. Mac OS X supports IPv6, IP Security and SNMP, letting applications that use those protocols potentially support Macs.

"You send out the SNMP traps for anything you want to monitor, [gather information in], so you don't have to live in front of the console," Moffitt Center's Bratt says.

Hewlett-Packard is among the first vendors to embrace the new Mac OS. The company's SNMP-based OpenView network, systems and storage management includes support for Macintosh servers and clients.

As for IT managers using Apple boxes to manage Windows, NetWare, Linux or Unix servers and workstations, the company says it's not going to happen. Apple has no plans to include that type of management in its products; instead, a spokesman says, the company will rely on third-party vendors such as HP to support those capabilities. ■

Mac OS X Version 10.2

OS X 10.2 includes many networking features that simplify management in heterogeneous networks.

Feature supported	Benefit
Based on BSDMACH 3.0 kernel	Operating system based on Unix version, uses same Unix/Linux management tools.
IP-native networking	Integration with other networks.
Active Directory and Lightweight Directory Access Protocol	Integration with other networks.
SNMP	Management from systems network management frameworks.
Journaled file system	Supports larger file sizes.
FTP, Remote Secure Shell	File transfer and remote access
Point-to-Point Tunneling Protocol-based VPN client, Kerberos authentication	Secure, authenticated remote access
IPv6/IPSec support, Transport Layer Security	Security across Internet
Portable Authentication Module	Unix/Linux authentication support.
POP-enabled mail	Easier connection to Microsoft Exchange and other mail servers.
Rendezvous networking	Easier IP-based Macintosh networking.

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Bank of America chooses Sigaba

■ BY CAROLYN DUFFY MARSAN

Bank of America has awarded Sigaba, a San Mateo, Calif., start-up, a multimillion-dollar deal that industry observers say is one of the largest-ever enterprise purchases of secure messaging software.

Sigaba will provide secure e-mail gateways, secure e-mail applets, authentication adapters and encryption services to Bank of America under the terms of the five-year contract (the exact amount of the deal was not disclosed). Bank of America's IT staff evaluated products from 27 companies for the secure messaging deal, which took two years to award.

Industry analysts say the deal is a sign that the secure e-mail market is picking up steam. The technology and standards to support secure e-mail have been available for some time, but few companies could justify the cost.

Charles Kolodgy, research manager for security products at IDC, says companies are being driven to purchase secure messaging software by new privacy regulations including the Gramm-Leach-Bliley Act in the financial services industry and the Health Insurance Portability and Accountability Act in the healthcare industry.

"The Bank of America deal is significant because somebody is putting down some big bucks for five years on this project," Kolodgy says. "This is probably the largest-ever dedicated secure messaging purchase. Even the U.S. government hasn't bought anything this big."

Federal regulation was at the center of Bank of America's decision.

"Compliance with the Gramm-Leach-Bliley legislation for secure transmission of private and confidential information led us to conduct a detailed evaluation of the underlying security in the vendor products," says Wil Koenig, senior vice president of technology and operations in Bank of America's messaging and collaboration services group.

Koenig says the other top priorities for the bank's secure messaging system were "implementation in a fashion that would not impose a performance degradation on our overall e-mail system ... [and] the ability to provision the service in a manner that didn't require our customers to download any software."

Bank of America chose Sigaba's software to ensure the secure delivery of confidential financial information via its existing e-mail system, which is based on Microsoft Exchange 2000.

Sigaba will provide Bank of America with its Secure E-mail Suite, which includes server software that encrypts e-mail messages sent from one organization to another according to predetermined policies. Sigaba also will provide the "send anywhere" feature, which bundles an applet inside an encrypted e-mail that lets the recipient decrypt the message regardless of the e-mail client software used.

Sigaba's secure e-mail suite starts at $50,000 for a two-year license that supports 100 internal and 100 external users.

Initially, Bank of America will use Sigaba's software to send encrypted e-mail to customers of its Global Treasury Services division, which had used Pretty Good Privacy desktop-encryption software. This initial phase of the Sigaba rollout will start early next year and involve several hundred Bank of America employees.

"We have a number of businesses [besides] Global Treasury Services that are interested" in the Sigaba products to meet Gramm-Leach-Bliley requirements, Koenig says. "I suspect we'll see fairly broad acceptance across the company... This is definitely one of the high-priority items on our docket."

IDC's Kolodgy estimates secure messaging software sales will be less than $20 million in 2002. "This deal is pretty significant," he adds. ■

PROFILE: SIGABA

Location: San Mateo, Calif.

Founded: 2000

Products: Server and plug-in software for secure messaging and document delivery.

Financing: $5M in venture financing.

Customers include: Cascade Bank, Department of Agriculture and National Institutes of Health.

GSA to keep vigilant with patch-notification service

■ BY ELLEN MESSMER

WASHINGTON, D.C. — The U.S. General Services Administration last week began offering federal civilian agencies a way to keep track of new software patches so that they can apply them before hackers exploit known vulnerabilities.

The free service is being offered to agencies that register through the GSA's Federal Computer Incident Response Center (FedCIRC), the division that notifies the GSA and other civilian agencies of important security incidents. The service is based on a customized version of SecureInfo's patch-management product, InSite Enterprise Vulnerability Management, which will be hosted at Veridian Information Solutions, the prime contractor awarded the five-year, $10.8 million contract by the GSA.

"It's no secret that most security incidents could be avoided if managers applies patches for known vulnerabilities," says Sallie McDonald, assistant commissioner for the Office of Information Assurance and Critical Infrastructure Protection within the GSA's Federal Technology Service.

Keeping track of all the vendor announcements related to security holes and patches for them is a daunting task, particularly for an organization the size of the federal government. The GSA says it hopes the task will get somewhat easier through the online FedCIRC service because the security administrators will receive information related only to the specific applications they want, rather than be overloaded with data they don't need.

The GSA will use the patch-notification service to make sure that software patches are applied methodically across agency computers. The service will be voluntary for other agencies. (One large agency, the Veterans Administration, began requiring its sites to use a software patching service of its own.)

Federal agencies expect to see a tightening of security requirements under the Homeland Security Act, which Congress passed and President Bush signed into law last week. It officially created the Department of Homeland Security, expected to combine parts of 55 agencies with security outfits, including the GSA's FedCIRC.

The Homeland Security Act also came to include legislation known as the Federal Information Security Management Act (FISMA), which Rep. Tom Davis (R-Va.) and Rep. Steve Horn (R-Calif.) introduced earlier this year. FISMA will be the new law to replace the Government Information Security Reform Act, which stipulated agencies had to periodically report security practices to the Office of Management and Budget (OMB). FISMA says agencies must comply with any new IT security guidelines the OMB sets forth in tandem with the National Institute of Standards and Technology. ■

Feeling vulnerable

A report issued last month on security weaknesses at 24 federal agencies said the GSA found "sensitive information, such as taxpayer data, Social Security records, medical records and proprietary business information could be inappropriately disclosed or browsed or copied."

Sun move placates users

Company ships Solaris 9 operating system for Intel servers.

■ BY DENI CONNOR

PALO ALTO — Ending nearly a year of sometimes cantankerous debate with its users, Sun appeased its Unix customers when it posted on its site a downloadable early-access version of its Solaris 9 operating environment for Intel-based servers and workstations.

In posting the early-access version of Solaris 9 12/02 X86 Platform Edition, the company ended a prolonged debate with its users over whether Solaris should be available on Intel platforms as well as SPARC systems.

Huge turnout

More than 1,300 users responded to a petition asking Sun to re-up development of Solaris on the X86 platform.

Sun sparked the debate in January, when it announced plans to halt work on the Intel version of Solaris 9, choosing to focus instead on developing the new operating system only for its own UltraSPARC processors. The action snubbed users' desire to run the most current Solaris operating system on less-expensive Intel servers and workstations. Users reacted by advertising of Sun's malfeasance in the *San Jose Mercury News*, asking the company to respond. In October, Sun announced it would ship Solaris 9 on X86 platforms.

"I was a pretty unhappy camper," says John Groenveld, associate research engineer for the Applied Research Laboratory at The Pennsylvania State University in State College, Pa. "Sun's management now understands that it has an obligation to its customers to provide Solaris on Intel platforms."

Groenveld is one of the most outspoken users pushing Sun to package Solaris 9 on X86 systems. In the Applied Research Laboratory, he has six SPARC-based servers and 20 Intel servers that run Solaris 8, Sun's previous version.

Solaris 9 for the X86 platform has the same features as its SPARC-based counterpart, which was released in May 2002. These features include an integrated iPlanet Directory Server; Kerberos and Secure Shell support; Solaris Volume Manager; software for controlling and allocating systems resources; and increased performance for large, multithreaded applications.

"This is a great first step for Sun," Groenveld says. "One of the best things about Solaris X86 is it allows people who live in a SPARC shop at work to have the same development environment at home or in their office on Intel systems." Groenveld is one of those users. He develops code on an X86-based laptop in his office for deployment on the SPARC- and Intel-based servers in the laboratory.

Solaris 9 12/02 X86 Platform Edition runs on a variety of Intel-based machines and Sun's LX50 server.

The early-access version of Solaris 9 12/02 X86 Platform Edition is downloadable from www.nwfusion.com, DocFinder: 3346, for $20. A commercial version is expected to ship this month for $100, company sources say.

Sun: www.sun.com

BindView tunes tools for Microsoft

■ BY JOHN FONTANA

HOUSTON — BindView this week will release tools for easing delegation and deployment tasks for those managing Microsoft Active Directory environments.

While bv-Admin for Windows 7.0 includes features for migrating to Windows 2000 and Active Directory, its focus is on making it easier to maintain Active Directory once it is in place. Microsoft's directory technology has been on the market for nearly three years but remains complex to set up and administer.

BindView's tools compete with similar offerings from Quest, NetIQ and Aelita, but all are finding this area a tough market, some experts say.

"BindView and the others have very necessary products, but given the economic downturn a lot of companies are bypassing these network management tools and trying to do this themselves, which is a mistake," says Laura DiDio, an analyst with The Yankee Group.

"They have a good product, but the support service could be worth its weight in gold," DiDio says.

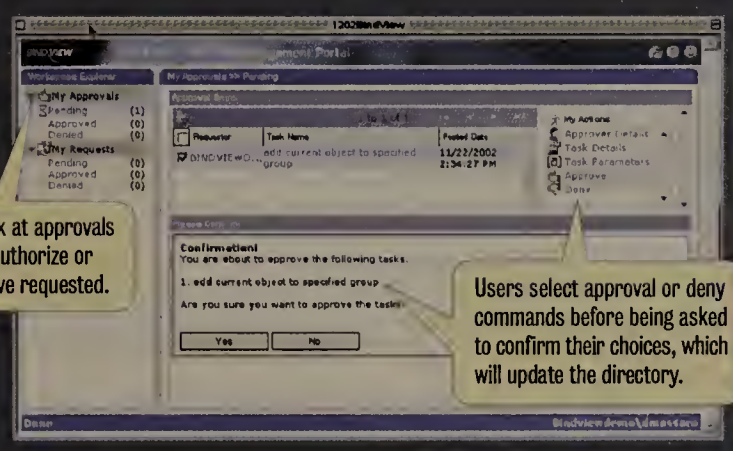
BindView is adding approval-based administration that marries the action of adding, changing or deleting a user, group or resource to the directory with a workflow approval process. For example, an administrator can designate that a new user needs access to a certain database, but access controls in the directory will not be activated until the administrator of that database approves an account for the new user.

The feature sends an e-mail to whoever must approve the new user account. The e-mail contains a link to a Web page where the approval can be denied or granted, triggering an update in the directory or a notification that access has been denied.

BindView also has added a Dynamic Web Portal feature, which is geared toward delegating directory administration. The Web-based interface uses the delegation rules in Active Directory to create a customized view of directory information.

Approval process

BindView's bv-Admin for Windows 7.0 includes the ability to create a Web-based process for assigning users access privileges that are stored in Active Directory.



"A help desk worker doesn't need to see the directory's organizational units and all the sites [on the network], they just need to change passwords," says Carl Meadows, product manager for BindView. The bv-Admin software has had a Web-based interface but required use of scripting and APIs to personalize the interface.

BindView also has added support for migrating Windows NT to Windows .Net Server 2003, which is expected to ship in April. However, the software will not support migrations from Win 2000 to .Net Server 2003 until a future release. In addition, bv-Admin for Windows 7.0 is being offered as a 64-bit application that would run on the 64-bit version of .Net Server 2003.

BindView expects to ship bv-Admin for Windows 7.0 on Dec. 2. It is priced at $11.95 per user. The GPO module costs $6.05 per user. ■

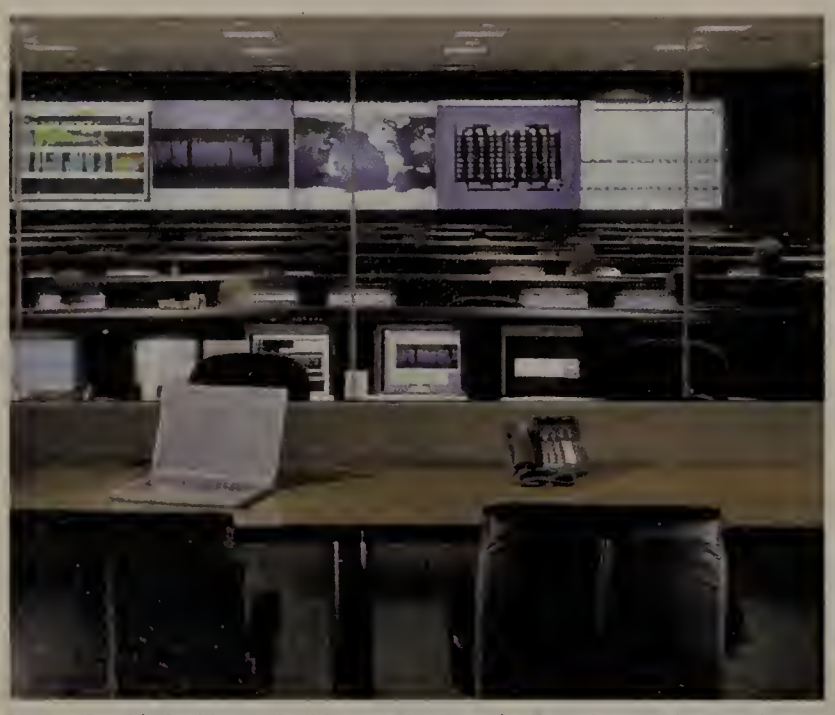
MasterCard

continued from page 1

allow, says Artie Ahrens, senior vice president of computer and network operations at MasterCard.

The New York disaster-recovery facility, which is actively involved in a portion of MasterCard's daily card-processing tasks, was not damaged by the Sept. 11 attacks. But for MasterCard, a new reality became evident. The company's assumption that it always would be able to fly personnel into this disaster-recovery site if necessary was wrong in that attacks shut down air travel across the country.

"We're going to move the back-up closer, within three to four hours' driving range," Ahrens says. "And we're going to be able to operate it remotely. In the existing facilities in New York, you don't have all the remote controls. For instance, if I'm starting a job on a mainframe or monitoring a Unix system or reloading software today someone has to sit in front of a console in New York or here."



MasterCard is looking to build a new back-up facility about 300 miles from its new data-processing center (shown here).

New digs

MasterCard is focused on getting its back-up strategy in order, even though the new data-processing facility where some 2,000 IT professionals' work is built to withstand even earthquakes. The land, in a rural area outside St. Louis, was essentially a donation from a local developer who sold several acres to MasterCard for a nominal fee in order to spur new housing and retail demand around it.

Beneath the quiet hillside, though, there's a telecom system fit for a metropolis. Southwestern Bell has installed SONET rings and multiple OC-12 links for redundancy. AT&T, MasterCard's primary carrier and the supplier of its global VPN network, has about 20 employees working full time for MasterCard. Inside one area of the data center, a giant screen, part of the Hewlett-Packard OpenView network management system, displays MasterCard's traffic volumes across the VPN.

The data center also boasts two IBM mainframes, more than 200 Cisco switches and routers, about 150 servers (mostly from Sun) and 13 EMC systems that pack 200 terabytes of storage capacity.

When it comes to security, MasterCard prefers to maintain its own disaster-recovery site rather than outsource to third-party providers.

"With SunGard or IBM, you have to put dedicated equipment on their floor as you're renting their floor space," says Randall Till, vice president of business continuity at MasterCard. "But larger companies are finding that as equipment becomes smaller, you can get a lot of equipment into a smaller space."

MasterCard has dozens of offices and processing facilities around the world where it could install a disaster-recovery operation. But places where terrorism is seen as on the rise — such as the Middle East — aren't high on the list for consideration.

At the end of the day, all important card-processing files sent over BankNet, which is tied into bank mainframes and processors around the world, come for final storage at the O'Fallon facility. So it makes the most sense to have the recovery site relatively nearby.

Like most companies, MasterCard's disaster-recovery procedures — outlined in a manual several hundred pages long that Till presented for a moment's look — involve a phased-in approach to restoration. Less-important applications might take hours or even days to bring back into use after any significant downtime. What the company calls Tier-1 applications — those involving the most important card-processing data — are backed up continuously through data-mirroring.

Critical data-mirroring

Till says he expects to see the expansion of the use of data-mirroring, which the company performs via Oracle database software and EMC storage equipment. Data-mirroring, or real-time duplication of data, could take hold not just in the new disaster-recovery center that's envisioned, but at a possible third back-up location under consideration, he says. But he says the process is very involved, and requiring the use of high-speed lines and careful attention to database size.

"When we moved to mirroring, [we had to rewrite] some of the corporate applications we had started to use in the replication process to keep different sites in sync," Till says.

MasterCard must be in line with any new regulations the Federal Reserve creates for disaster recovery (see www.nwfusion.com, DocFinder: 3350), so the company will target the two-hour restoration time frame the government already has suggested it wants for financial-related information.

"We want to reduce recovery time from 24 hours to two hours," he says.

The role of MasterCard in the trillion-dollar card-processing industry is critical.

"If we have a member bank that goes down, we do the stand-in authorization processing," Till says. "And we see that on a regular basis." ■

Get more information online.
DocFinder: 3349
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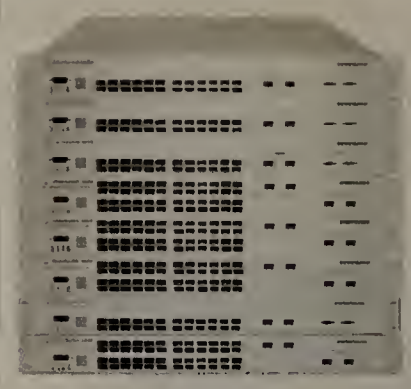
Alcatel

continued from page 1



Alcatel's OmniStack 6600 is designed to work in a stack as a virtual chassis backbone switch.

in several respects — namely, improved failover capabilities and delivery of up to 4G bit/sec links between each switch in a stack.

"Alcatel is saying it can offer carrier-class availability in a bunch of stackables, which is an interesting concept," says Stan Schatt, vice president with Giga Information Group.

While the new OmniStack 6600 switches are not Alcatel's first stackables, they are its most advanced. The 24- and 48-port devices, which start at roughly $170 per port, are meant to act as virtual chassis switches in high-density enterprise wiring closets or backbones.

Texas A&M University, a large Alcatel network shop that has been testing beta versions, plans to deploy 6600s mostly at the LAN edge. The College Station school expects to use them in areas that support real-time traffic, such as offices with voice-over-IP (VoIP) and IP video applications, according to Willis Marti, associate director of the school's Computer and IS Networking Group.

"We like stackables a lot more than chassis-based products in the [wiring] closet," Marti says. "It's easier to manage," because switches in the stack can be added and removed without changing any configuration files or shutting down a larger chassis. He says it also is a plus that each switch cannot act as a single point of failure — each has its own power supply.

The only downside to the stackables, he says, is that with their 1.5U (2.62 inches) form they take up more room than Alcatel's previous 1U (1.75 inches) OmniStack 6148 switches.

As many as eight OmniStack 6600s can be linked with dual Gigabit Ethernet connections in a "cascade" loop configuration, in which each switch is linked to an adjacent switch. This provides a virtual backplane of 4G bit/sec for each switch port in the stack when each connection runs in full-duplex mode.

A stack of OmniStack 6600 switches can be controlled as a single network device, with one IP address. The stack can be viewed and configured as one device through SNMP-based tools and Alcatel's OmniVista switch management software, which is used to manage its OmniSwitch 7000 and 8000 series chassis products. The switches support Layer 3 switching and other features found in high-end wiring closet chassis products, such as Open Shortest Path First, 802.1X authentication and quality of service.

Each switch in the OmniStack 6600 stack can act as the equivalent of a supervisor, or management module, from the chassis switch world. This lets any of the switches take over as the control module for the virtual chassis, the company says.

The 6600s will compete with products such as Cisco's fixed-configuration Catalyst 2900 and 3500 boxes, which can be combined into a chassis-like device through the use of Cisco's GigaStack technology. Nortel can do the same with its BayStack boxes, and Allied Telesyn has a similar technology.

3Com is looking to re-establish itself at the high end of the enterprise network market with its Extendable Resilient Network technology, which links fixed-configured boxes with high-speed interconnects as an alternative to chassis switch products.

Giga's Schatt says Alcatel's differentiators include its ability to offer 4G bit/sec connections between switches in a stack vs. closer to 1G bit/sec links from others.

Schatt says the 6600's failover scheme is an improvement over competitors' offerings. Most vendors' stacked switches become unmanageable as a single device if the supervisor switch fails, whereas the OmniStack can fail over to a back-up switch for controlling the stack.

Regardless, Alcatel has a challenge ahead in trying to win share from Cisco, Nortel and 3Com, which lead the fixed-configuration switch market. Alcatel held only 1.8% of the overall $15 billion LAN switch market last year. ■

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10G

continued from page 1

the flow of high-speed packet streams to a port, can cause throughput to dip below 7G bit/sec on some products, according to Brian Tolly, senior engineer and analyst with Tolly Group, a network testing and consulting firm.

Price isn't right

"For the price that 10 Gigabit is going for," says Sheng Guo, CTO for the State of New York Unified Court System, "I would want to make sure support for 10 Gigabit Ethernet really means I'm going to get 10 gigabits per second."

Guo's network connects court and correctional facilities throughout New York over dark fiber and a mix of metropolitan-area Gigabit Ethernet and SONET. Guo says that he's found 10G Ethernet to be cost-prohibitive. And the idea that the technology might not deliver as much bandwidth as it promises makes him inclined to put off any tests until vendors can support the real thing.

The main reason most boxes don't really support the higher speeds is that switch platforms such as the Cisco's Catalyst 6500, Foundry's BigIron 15000, Extreme's BlackDiamond 6800 and Nortel's Passport 8600 have all been on the market for years. The 10G Ethernet standard was only ratified by the IEEE this summer.

The limitations of these chassis for handling 10G Ethernet are widely known, vendors claim.

"We have 8G bit/sec to each slot on our chassis," says John Erlandson, director of product marketing for Extreme. "That's well-documented, and we've never tried to disguise that in any way."

In addition to providing full-duplex 8G bit/sec, Erlandson adds, Extreme's products also can handle features such as quality of service and multilayer routing without affecting throughput.

"The performance our customers are getting now, at 8 gigabits per second on one pipe, is eight times as fast as Gigabit Ethernet, and almost as fast as SONET OC-192," which is about 9.9G bit/sec. However, he adds, the cost for 10G Ethernet is about a quarter the price of its virtual SONET equivalent.

So 8G bit/sec instead of 10G bit/sec — what's the difference? A lot when you consider 10G Ethernet pricing.

Dell'Oro Group says that customers can expect to pay an average of $25,000 per 10G Ethernet port this year. Long-reach 10G Ethernet ports from vendors such as Foundry, Cisco and Extreme can cost in the range of $75,000 to $80,000 for a single port on a module that takes up an entire slot in a chassis.

While Dell'Oro expects the per-port cost to drop to around $7,000 in 2005 (still five times what Gigabit cost in 1999), it is expected that the technology will appeal to only the largest shops. IDC expects that only 45,000 10G Ethernet ports will ship this year, as opposed to 8 million Gigabit ports worldwide.

Meanwhile, eight 1G ports would cost about $10,000 to $16,000.

Ten Gigabit might be on the distant horizon for many corporations, but users looking to make a chassis-switch purchase now could be caught in the middle of a major upgrade cycle by their respective vendors.

Coming soon?

In conference calls with investors last month, Foundry CEO Bobby Johnson alluded to his company's next-generation core switch, code-named Mucho Grande, which sources say will support more than 10G bit/sec of bandwidth per slot and is expected to debut next year.

Other vendors have hinted that chassis upgrades are around the corner as well.

"Will we be changing BlackDiamond to accommodate an extra two Gigabits of Ethernet bandwidth per slot? That's very unlikely," says Extreme's Erlandson, who hinted that a successor to BlackDiamond also could be expected next year.

Alcatel's OmniSwitch 8800, which was announced in February and is scheduled to ship this month, supports approximately 13.2G bit/sec per slot, according to the company. Modules with single-port 10G Ethernet ports will be released from Alcatel in the second quarter.

Users and analysts say a wait-and-see approach might be wise if 10G Ethernet is in their game plans.

"If 10 Gigabit is in the long, long-range plan, [users] should work with their vendors and get some [nondisclosure agreement] information and" work out a timetable for when the vendor will release a true 10G Ethernet switch, says Lawrence Orans, senior analyst with Gartner. "If [users] need 10 Gigabit now, they should only make tactical investments on older switching platforms" that are available today.

For now, many analysts say market newcomer Force10 Networks is one of the few options for high-density 10G Ethernet switching.

"If you want to buy a high-end switch with 10 Gigabit Ethernet, Force10 is really the only option," says Zeus Kerravala of The Yankee Group.

Force10, which debuted its E1200 switch in September, says it can provide up to 40G bit/sec of bandwidth between switch modules in its chassis. The company is shipping dual-port 10G Ethernet cards, which cost about $110,000.

"But on the other side of it," Kerravala adds, Force10 "is a start-up that's debuting in a market that's very young — and very expensive — while in the middle of a down economy. The question is, are they going to hang in there long enough for the market to come around."

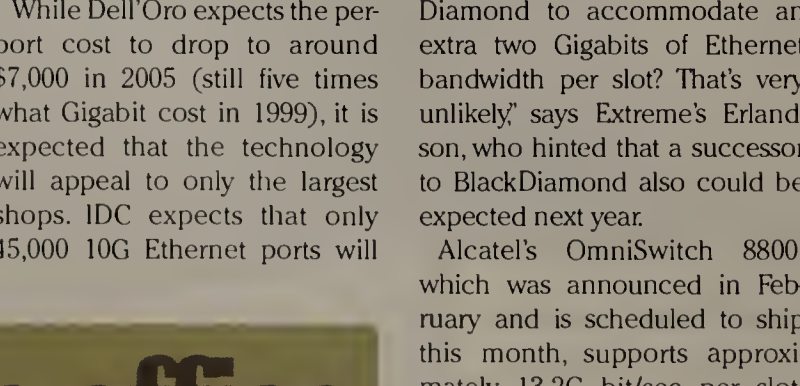
For users working on the most cutting-edge network technologies, the performance boost of Force10 is worth any risks.

Two Force10 E1200s were recently installed at the San Diego Supercomputing Center (SDSC) to support a cluster of 512 Gigabit Ethernet servers. The servers are part of the Teragrid project, an effort by the SDCS, along with the National Center for Supercomputing, to build the world's largest distributed supercomputer, according to Kevin Walsh, senior network engineer at the SDSC.

"There is no other manufacturer at the moment that has combined this kind of performance and capacity," says Walsh, adding that he has tested 10G Ethernet switches from other vendors. He did not name specific companies. ■

10 Gigabit bottleneck

Many vendors offering 10 Gigabit Ethernet modules for their high-end switch chassis cannot deliver full 10G bit/sec throughput because of limitations on the bandwidth between the switch module slots and the chassis backplane.



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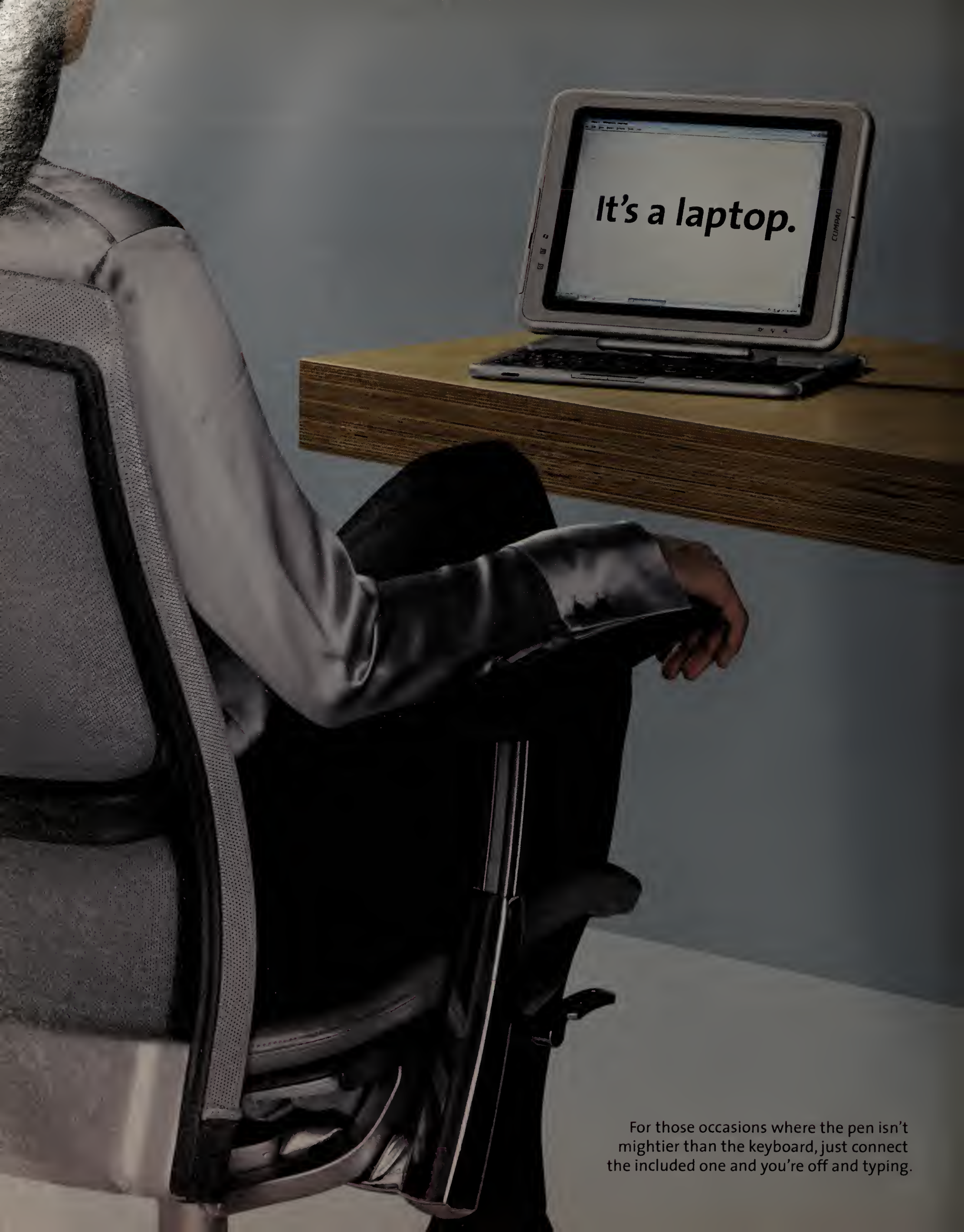
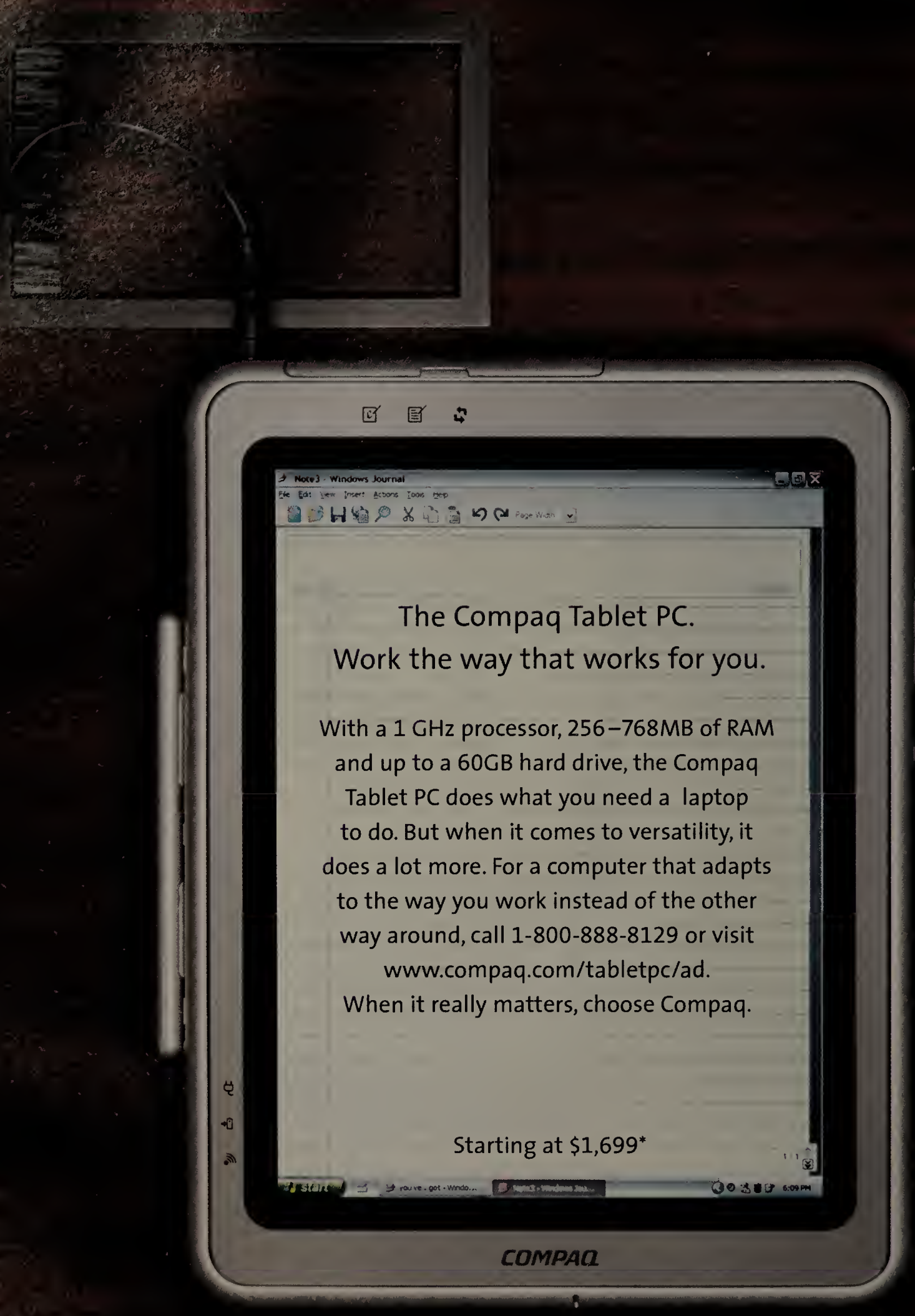


For those occasions where the pen isn't mightier than the keyboard, just connect the included one and you're off and typing.

HP recommends Microsoft® Windows® XP Professional for Mobile Computing.

Shown monitor, keyboard and mouse sold separately.

Even if you're a Plutonium 1,000,000 K Club business traveler, you'll have to come back to the office eventually. When you do, just set your Compaq Tablet PC in its optional dock and you're good to go. Or stay, as the situation requires.



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Short Takes

■ **Raritan,** a vendor of keyboard-video-mouse switches, recently announced a product that lets small and midsize data centers manage servers and other network devices distributed across networks over IP. Called the **IP-Reach M Series,** the products have one- and two-port configurations that attach it to an Ethernet network.

From IP-Reach M units, administrators can access network devices to manage them. The products are aimed at replacing remote-access software, which requires an agent on each device. A Web-based management utility allows remote access. The IP-Reach M products are $2,800 and $3,800 for one and two ports, respectively, and are available now. www.raritan.com

■ **Linmor Technologies** recently announced the **Nebula PM** appliance for network performance management. The rack-mountable appliance is based on Linux and tracks performance of Layer 1 through Layer 3 switches, routers and other network devices. The box performs monitoring, reporting and graphing of performance data on network devices. Nebula PM then collects the performance data from those devices. Pricing for the Nebula PM appliance starts at $9,500, and customers can receive a 25% discount through March 31, 2003. www.linmor.com

■ Storage vendor **Northern Parklife** has rolled out a free software utility that can help customers determine the cost of managing their companies' storage. Called **Cost Wizard,** the tool works with any company's quota management package and can estimate how much an organization will save by implementing a storage resource management package. Cost Wizard generates a report that details disk capacity, free disk space, number of files over a certain size and how much space can be reclaimed using quota management software. Users can download the software from www.northern.net

In Site: Lessons from Leading Users

IP VPN extends manufacturer's reach

■ BY ANN BEDNARZ

In an effort to save money and tie together its widely scattered groups, Russ Berrie and Co. is turning to high-speed IP VPNs to augment its existing frame relay network connections.

In the past, the Oakland, N.J., manufacturer of gift items has relied on frame relay to connect its primary overseas sales offices to corporate headquarters. But frame relay is expensive — too expensive to let Russ Berrie connect all its remote offices, says Renee Steinfeld, network administrator at the company.

Frame relay's high price tag meant many satellite offices were without a direct link to headquarters. Russ Berrie's product-development personnel and manufacturing subsidiaries are scattered throughout the U.S. and abroad.

Enter IP VPNs, which let the company deliver more bandwidth to its remote offices for less money than frame relay would, Steinfeld says. To outfit its Seoul, South Korea, office, Russ Berrie priced a 128K bit/sec frame relay circuit at $3,000 per month, compared with $100 a month for a 768K bit/sec VPN setup.

In this case, going with IP VPN was an easy decision for Russ Berrie. The Seoul office had no link to corporate headquarters, so users there are happy to have any connection, she says.

But the decision to deploy IP VPNs is not as clear-cut in remote offices that are accustomed to frame relay services, Steinfeld says. IP VPNs are new and have a reputation for not being as reliable or stable as frame relay circuits. The possibility of worse performance has Russ Berrie in no rush to completely swap existing frame relay circuits for IP VPN. At least not yet, she says.

Meanwhile, for its new connections, Russ Berrie is working with Cisco IP VPN equipment.

This spring, Russ Berrie activated its first two VPN links at the company's home goods division, called Russ Home, in Mount Juliet, Tenn., and the

See IP VPN, page 22

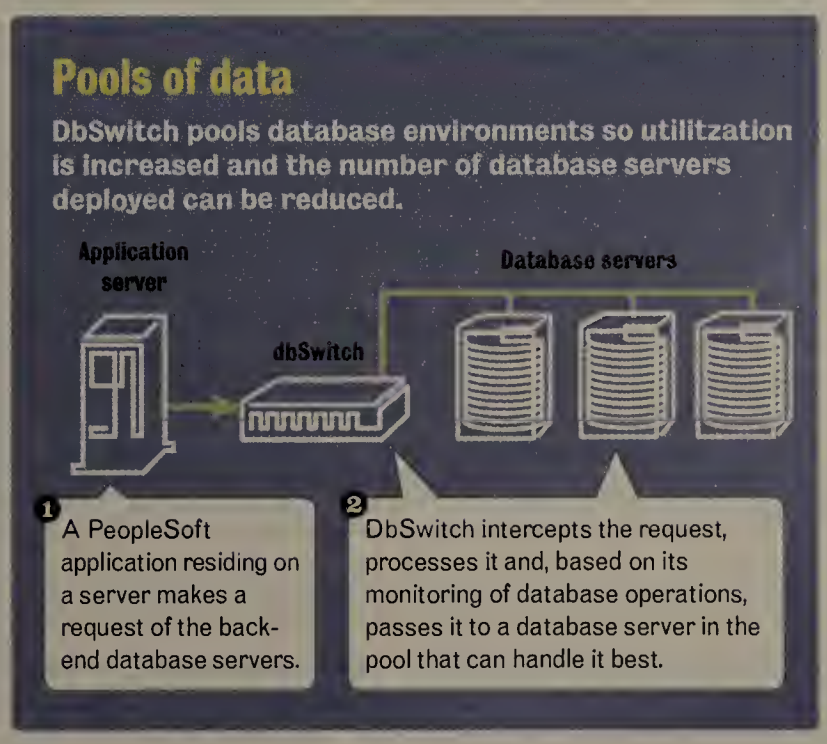
Switch lightens database server load

■ BY DENI CONNOR

LEXINGTON, MASS. — Startup Savantis Systems is introducing a switch that lets users pool databases to better utilize capacity and potentially reduce the number of database servers they maintain.

The company says individual database servers typically are only 7% to 15% utilized. By combining the activities of each database server into a pool, Savantis can redistribute that utilization so database servers are used more equally.

Savantis expects its dbSwitch to be available in March 2003. DbSwitch connects application servers to database servers, which, in turn, attach to shared storage located on a Fibre Channel storage-area network. The switch's software combines the database environment into one virtual pool of information — a database-area network, the company calls it — that can be managed from a single point and be utilized more efficiently. Using algorithms, the dbSwitch software moves applications from database server to server based on the load and quality of service needed.



For instance, a PeopleSoft application residing on a server makes a request of the database servers. Because dbSwitch knows the resource utilization patterns and health of all the servers in the data-area network based on historical monitoring, it already has utilized its resource optimization algorithm to determine which physical database server will process the request.

"The whole concept of consolidation has always been around creating a pool of resources and using economies of scale to reduce the number of resources you need to service your organization," says Gil Hecht, president and founder of Savantis.

DbSwitch uses an embedded Linux operating system and is built on Intel processor hardware. Web-based management software lets IT managers monitor systems remotely.

Hecht, formerly vice president of business development for Aladdin Systems, founded Savantis in October 2000. The company, which has 25 employees, is funded by Star Ventures and Highland Capital Partners for $5 million.

DbSwitch will sell for approximately $150,000.

Savantis: www.savantis.com

Los Alamos builds big InfiniBand cluster

■ BY ASHLEE VANCE

LOS ALMOS, N.M. — Los Alamos National Laboratory has turned to server maker Promicro Systems to build what it says is the largest cluster that uses the fledgling InfiniBand interconnect.

Los Alamos recently said it was building a 128-processor cluster that includes Promicro servers running on Intel's Xeon chips and Linux. The government lab picked InfiniBand for the high-speed interconnect between servers, as it looks to test the technology for possible use in larger systems. InfiniBand provides a high-bandwidth, low-latency interconnect between systems.

The use of InfiniBand marks an effort by Los Alamos to shy away from proprietary interconnects from Myricom and Quadrics, says Steve Tenbrink, a group leader of network engineering group at Los Alamos.

"We are trying to push open standards for interconnects where we can," Tenbrink says.

This new system, equipped with faster Xeon chips, joins a growing family of Beowulf Linux clusters at the laboratory. Los Alamos used low-power Transmeta processors in an RLX Technologies-based server blade cluster to test ways to lower cooling costs and raise the stability associated with large computers.

While Los Alamos has yet to get the Xeon-based cluster up and running, it plans to use the system to run some of its nuclear simulation software. But it will depend on how well InfiniBand works with a large number of computers, Tenebrink says.

"The problem is that as you scale higher and higher, interconnect performance tends to get worse and worse. You really have to be careful how you address that problem," Tenbrink says.

Los Alamos expects to have the new system up and running in a few months.

Vance is a correspondent with the IDG News Service's San Francisco bureau.

Vendor crafts handheld access to corporate apps

■ BY JOHN COX

LAS VEGAS — At the recent Comdex show, National Semiconductor showed a working prototype of a handheld computer that can access standard enterprise applications over more wireless infrastructures.

Roughly half the size of an 8.5-by-11-inch paper sheet, the Geode Extended Office (GXO) device was designed to incorporate Bluetooth and 802.11b wireless adapters. GXO can use a Bluetooth-equipped cell phone as a modem over cellular connections, while 802.11b can use wireless LANs at corporate offices or public access hotspots.

Using the client portion of Citrix Systems' ICA protocol, the device displays the user's complete server-based Microsoft Outlook e-mail interface. The Citrix code lets a device display the output of Windows or Unix applications running on servers.

At Comdex, the vendors simulated an electronic interaction between two doctors, who used software from Collabrix to review an emergency room patient's history and watch a video that showed a scan of the patient's heart. Via the Citrix client software and the Citrix MetaFrame server, the doctors could access several server applications.

The handheld, officially a "concept device" instead of a product, is 6 by 7.2 inches by 1 inch thick. With batteries, the GXO is far from being a light-weight: It weighs 1 pound 9 ounces. But National Semiconductor and its partners, including CoCom International, which did the hardware engineering, and Studio Red, which created the aluminum exterior design, packed a lot into it:

- National's Geode SC2200 processor, designed for handhelds.
- Full Windows XP Professional operating system.
- A 10G-byte Toshiba disk drive.
- Integrated high-end video graphics.

COMDEX FALL 2002

- 16-bit full stereo sound.
- 6.3-inch, 1,024-by-768-pixel super-fine TFT LDC display, with touch-screen (four times the size and five times the resolution of high-end PDAs).
- A built-in VGA video camera.

The goal of the project was to create an appliance-like handheld computer that could work smoothly over available wireless connections, with existing office and enterprise applications, says Jeff Water, director of National Semiconductor's Consumer Access Business Unit.

As with all such devices, there are trade-offs. The GXO's display, while crisp and brilliant, renders a full Outlook screen in very small text. An executive had to adjust the font size to make it readable. Its size and, especially, its weight mean that most users wouldn't carry it around in their pockets for calendar and other personal information management tasks.

National Semiconductor is talking with device manufacturers that might license the GXO package of chips, system software, drivers and the like to create handheld products in the future.

National Semiconductor: www.national.com

In Site: Lessons from Leading Users

IP VPN

continued from page 21

Seoul office. Showrooms in Chicago and throughout the U.S. eventually will be linked via VPN, too, Steinfeld says. Plus, two sites in China will be ready to be activated as soon as local ISPs in China get their lines stabilized, she says.

"I've already configured the routers," Steinfeld says. "To be honest, it only takes me about an hour to configure a VPN router and send it out, as long as I have the ISP's information. It's very simple."

Most traffic running over the network is generated via enterprise resource planning (ERP) and e-mail applications, she says.

The new VPN links let remote design and sales offices swap product design information and send electronic transactions to headquarters using new ERP software from J.D. Edwards that Russ Berrie is deploying.

Before the VPN rollout, users in South Korea, for example, had to submit order information manually, relying on phone calls, faxes and multistep processes that required sending orders through many offices until they reached Hong Kong, which is connected to corporate headquarters via frame relay.

Today, users in South Korea can link directly to the ERP system, which consolidates multiple human resources, financial and accounting applications on one platform. The combination of VPN connectivity and a single application platform means more users can get information more easily and consistently than before, Steinfeld says.

In addition to the remote sites outfitted with VPN routers, Russ Berrie is giving certain users VPN client software for remote access. So far, client access is limited to the IT department and consultants working on J.D. Edwards' implementation.

Russ Berrie also is experimenting with using a VPN as a backup for its frame relay-connected sites in the U.K. and Hong Kong. "They'll have VPN, but it won't be their primary link," Steinfeld says. "We're not ready to change their entire infrastructure just yet."

Managing the VPN gear remotely so far hasn't been a problem. Steinfeld uses dedicated modem lines to dial into a router to troubleshoot problems. "We don't have a lot of technical people who are Cisco-savvy in our other locations, so if there's a software upgrade or a new application that we want to add to the router, it's easy for me to do from here," she says.

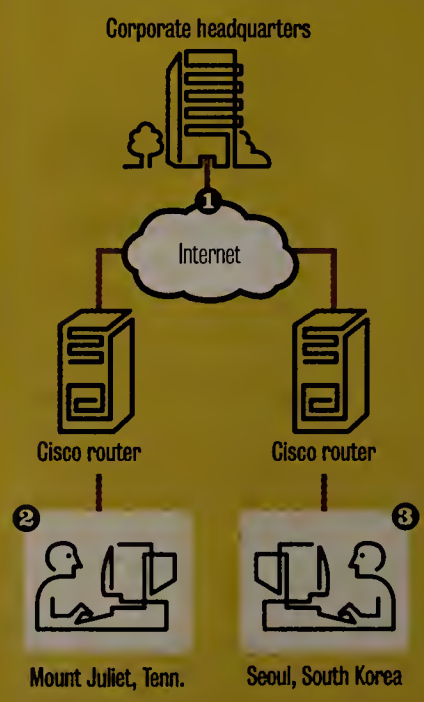
When Steinfeld had to install Cisco firewall software on the VPN router in South Korea, she simply dialed in and configured the settings remotely, without kicking anybody off the net.

So far, the IP VPN connections are performing well. "It's hiccuped every once in a while — it went down once in a big storm," she says. "But frame relay would have gone down in the storm, too."

If there's a downside, it's having to deal with multiple overseas ISPs, Steinfeld says. "Working with ISPs in Asia has been the biggest hurdle that I'm still trying to jump over," she says. ■

New communications

Russ Berrie's new VPN enables electronic transactions between headquarters and remote design and sales offices.



1. Russ Berrie's VPN supports 512K bit/sec or 768K bit/sec Internet connection.
2. The home goods division in Mount Juliet can swap product design information electronically with headquarters via VPN.
3. Users in the Seoul sales office can send electronic transactions via VPN to Russ Berrie's corporate ERP system.

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Dave Kearns

Spam, spam, spam, lovely spam

Spam. As a food we celebrate its virtues in two well-publicized festivals, one in Austin, Texas (www.nwfusion.com, DocFinder: 3325), and another in Austin, Minn., home of the Spam Museum (DocFinder: 3326). Most everyone thinks Spam, the food, is a fun subject.

Spam. As a verb, it is undoubtedly the most reviled subject in cyberspace. Seemingly mature, rational individuals seem to foam at the mouth when the subject is raised. And this occurs even if we aren't talking about vile, perverted sexual practices.

Even receiving yet-another copy of the infamous Nigerian Spam Scam (DocFinder: 3327) is enough to set them off.

I use a combination of mail filters and the delete key to rid myself of the stuff because I have many fairly widely seen addresses, leading to a volume of about 500 pieces of spam per day. There are days when more than 90% of the mail I receive can be classed as spam.

Yes, it's irritating, but when my most liberal friends start screaming for the death penalty for spammers I begin to think the problem has gotten out of hand.

Not the spam problem — that's been out of hand for years. No, I mean the antispam problem that threatens to totally disrupt communications through the use of blacklists (see an earlier column "Spam rebel with a cause," DocFinder: 3328) while diverting attention from the really insidious security threats within the Internet. Code Red and Nimda did far more damage to computer systems than all the spam put together — but the people most often criticized were not the creators but those who didn't prevent the attacks from occurring.

Weeding out the spam in your e-mail is no different than weeding out the unwanted marketing materials in your snail mail. It's little different from "weeding out" the weeds in your garden.

If you aren't vigilant, the weeds will overwhelm the flowers. Many of us have neither the time nor the training to do constant weeding in the garden, so we hire people to do the weeding for us.

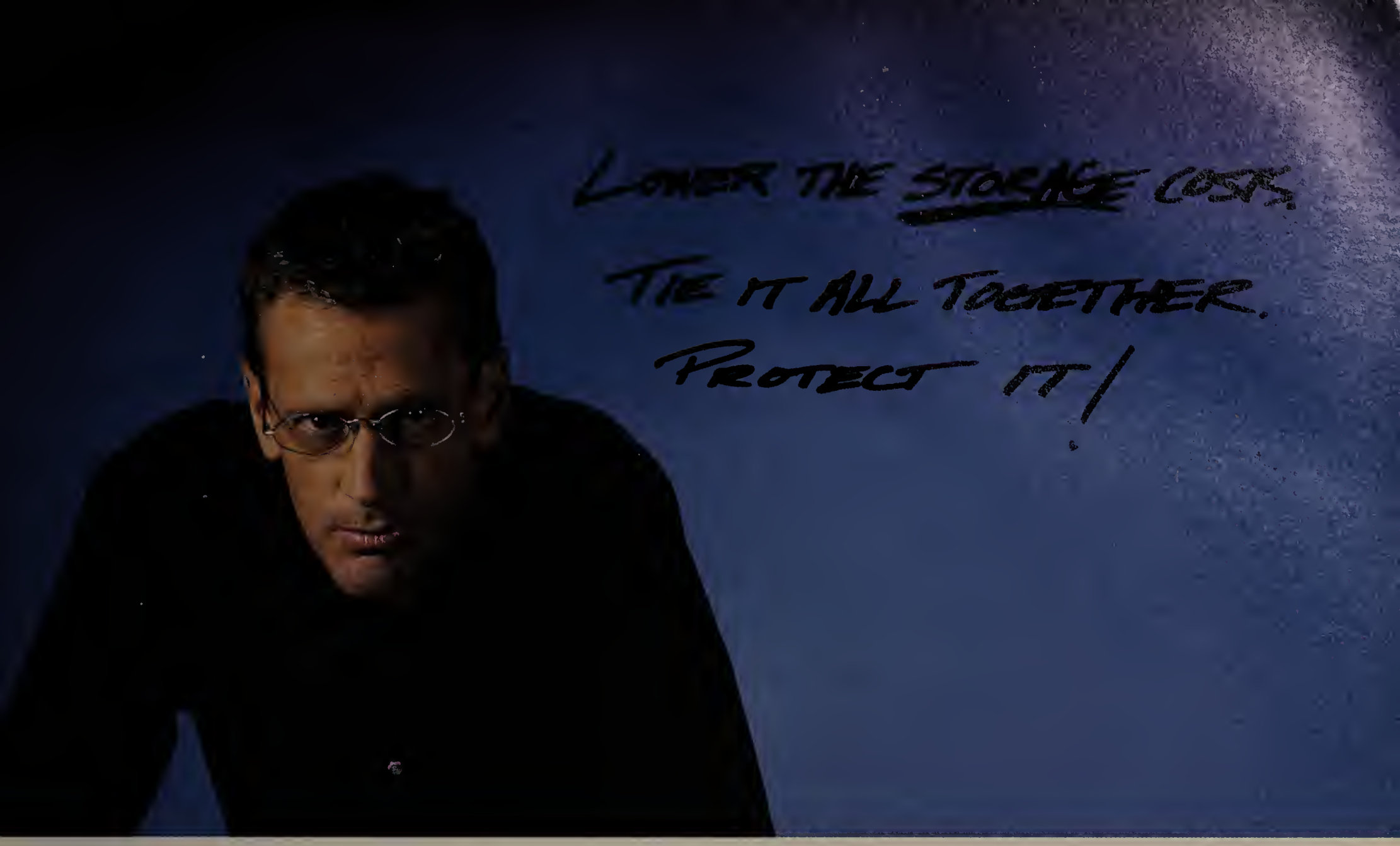
But if you do that and the person you hire pulls up flowers along with the weeds, do you simply say that its "acceptable collateral damage," or do you fire that gardener and get one who can tell the difference between a weed and a daffodil?

You should use the same care when choosing antispam utilities and services.

Kearns, a former network administrator, is a freelance writer and consultant in Silicon Valley. He can be reached at wired@vquill.com.

Tip of the Week

The best way to stop spammers is to hit them where it hurts — in the pocketbook. **Novell** did that to one who had abused its free public e-mail hosting service, MyRealBox (www.myrealbox.com) by taking it to court (see DocFinder: 3329) and winning. It's a small victory, but one we all should applaud.



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■ PORTALS ■ MESSAGING/GROUPWARE
■ E-COMMERCE ■ SECURITY
■ NETWORK MANAGEMENT ■ DIRECTORIES

Short Takes

■ **Macromedia** announced last week a new version of its **Director MX** multimedia authoring software, which makes it easier for customers to create kiosk and training applications that are accessible to end users with disabilities. The upgraded software, which is scheduled to ship this month, meets the U.S. federal government's Section 508 requirements for Web application accessibility. The new version of Director MX can be used to create kiosks in museums, airports or government offices that have speech capabilities similar to screen readers for visually and physically impaired users. One possible application of the software is creating emergency response kiosks that can help citizens find shelter and family members in the case of a catastrophe such as an earthquake or terrorist attack. The software also can be used to create CD and DVDs, online courseware and Web-based applications with built-in speech capabilities. Director MX costs $1,200 per copy, with discounts for users upgrading from older versions. It is available for Windows and Macintosh platforms. **www.macromedia.com**

■ Security flaws in **RealNetworks'** media player software could let attackers run arbitrary code on a user's computer, the company warned last week. Three vulnerabilities exist in the Windows versions of the RealOne Player and RealPlayer, according to a statement on RealNetworks' Web site. By encouraging a RealOne or RealPlayer user to download a malformed file, an attacker could run code on a user's system. RealNetworks recommends users install a patch to fix the software, although there are no reports so far of attacks using the exploit. The RealNetworks statement is at **www.nwfusion.com, DocFinder: 3334.**

Antispam help is on the way

■ BY CAROLYN DUFFY MARSAN

In the last year, spam has grown from a nuisance to a nightmare for corporate network executives, who are scrambling to respond to the increased volume and objectionable content of unsolicited commercial e-mail messages sent to end users.

In response, messaging vendors are beefing up their antispam filtering capabilities targeted at corporate customers. Among the vendors that started shipping new antispam offerings in recent weeks are Lotus, Mirapoint, Sendmail and Tumbleweed.

Meanwhile, Brightmail, a big player in antispam packages for the service provider market, in October stepped up its push into the enterprise market with Version 4.0 of its Anti-Spam software. Brightmail's enterprise customers include Cypress Semiconductor, Motorola and Lycos.

All these companies sell software designed to identify and stop spam at the edge of corporate networks, before these unwanted messages arrive at corporate e-mail servers or are sent to end users. At the same time, these software packages aim to maintain e-mail system performance and reject as few mission-critical e-mail messages as possible.

"Enterprises are concerned about protecting their networks at the perimeter, at the e-mail gateway," says James Kobielus, a senior analyst with Burton Group, which in November issued a report on combating spam, and a *Network World* columnist. "They want a floodwall essentially to catch spam ... [before] spam becomes a huge consumer of resources, including bandwidth, CPU and mail administration."

The sheer volume of spam is what's driving more corporations to purchase antispam filtering software. Spam represented between 8% and 10% of all e-mail messages on the Internet a year ago, but it has grown to as much as 30% to 40% of the messages corporate users receive today, experts say.

"Spam is the No.1 problem facing e-mail administrators and e-mail users," Kobielus says. "It's out of control.... And the problem has gotten significantly worse in the last year. The volume has grown by a multiple of four to five in a year."

Pornographic spam, in particular, is on the rise. Kobielus says it has doubled in the last year and now accounts for 10% of all spam.

Network managers are tackling the spam

See Spam, page 30

Recent antispam announcements

Messaging vendors beef up their filtering capabilities.

Company	Product	New features	Ships	Cost
Brightmail	Anti-Spam 4.0 Enterprise Edition	Identifies variations of the same spam message; uses HTTPS instead of SMTP to send out spam rules every 15 minutes; supports Windows 2000.	October	$4 to $15 per user, per year, depending on number of users.
Clearswift	SpamActive filter added to Mailsweeper for SMTP	Scans content for messages previously identified as spam or showing similar construction; users get regular updates to an antispam database.	August	Free to Clearswift support and maintenance customers.
Lotus	Domino 6	Supports external black lists; features an improved mail rules section that lets administrators quarantine or delete messages with spam characteristics.	October	New antispam features come bundled with Domino 6.
Mirapoint	Mirapoint Messaging Operating System 3.3	Software upgrade to Mirapoint appliance analyzes incoming mail for spam characteristics; updated weekly with new antispam rules; supports external black lists and user-created white lists.	November	Antispam features cost about $1.25 per user.
Sendmail	Mainstream Manager 2.0	Does message content analysis, statistical and linguistic antispam analysis, and relay blocking.	November	Antispam features cost about $5 per user.
Tumbleweed	Messaging Management System 5.5	Scans HTML code embedded in messages, ships with an antispam lexicon and policies; supports black lists and user-created white lists.	October	N/A

Collaboration software gets CAD support

■ BY JOHN FONTANA

CAMBRIDGE, MASS. — With an eye toward reducing product development cycles, Web-based collaboration vendor eRoom Technologies is adding support for CAD drawings to its online meeting room software that will let users share, edit and annotate those files.

Online collaboration on design drawings is becoming a trend in manufacturing as companies work in a more distributed fashion in their own companies and with business partners, experts say.

With eRoom Viewer for CAD Visualization, eRoom is providing browser-based access to two-dimensional and three-dimensional CAD and Electronic Design Automation (EDA) files and support for more than 200 engineering and business file formats. The company licensed the technology from Cimmetry Systems.

"Online collaboration has been one real bugaboo in trying to do design in a distributed world," says John MacKrell, a senior consultant with CIMdata. "The trend is toward online meetings that can shorten product development life cycles and take the pain out of decision making."

MacKrell says eRoom falls into the category of products that let users view and discuss a drawing but require an engineer to return to the design program to make changes. He says vendors such as CoCreate and Alibre let users collaborate and make changes online. He says it's not a matter of which class of products is better, but what fits a corporation's needs.

"The codesign products lean toward engineers with big workstations and private lines, while eRoom is simple enough to be

See eRoom, page 30

'NET INSIDER

Scott Bradner

A resilient architecture

Sept. 11, 2001, was a generally quiet day on the Internet. This was true even though the attacks in New York destroyed some important network facilities. It might not have looked that way to those trying to get through to CNN and other news sources, but those problems turned out to be local to the news sources.

There also were connectivity disruptions to a few countries because of poor design choices made in the past.

These are some conclusions in a recently released National Research Council report.

On a somewhat more worrisome note, the report indicates that the Internet might not fare so well if it was the direct target of a major attack.

The report, "The Internet Under Crisis Conditions: Learning from Sept. 11," is available for online reading (through a crappy reader) or purchase at www.nap.edu/catalog/10569.html?onpi_topnews_112002.

The main reason the Internet was largely unaffected on Sept. 11 is its underlying architectural vision. This vision comes from some early research that led to the ARPANET (see "On Distributed Communications: Introduction to Distributed Communications Network" at www.nwfusion.com, DocFinder: 3332) and the initial ARPANET design philosophy ("The Design Philosophy of the DARPA Internet Protocols" at DocFinder: 3333).

The Internet consists of many highly interconnected individual networks, most of which are highly interconnected internally. This architecture means the loss of major interconnection points or major communications links has little effect because the traffic just bypasses the outage through other links or interconnection points.

A few network outages occurred Sept. 11 in which the connectivity was not as rich as it might have been or users were directly connected to network equipment that was destroyed or which lost power in the aftermath. But these outages were isolated.

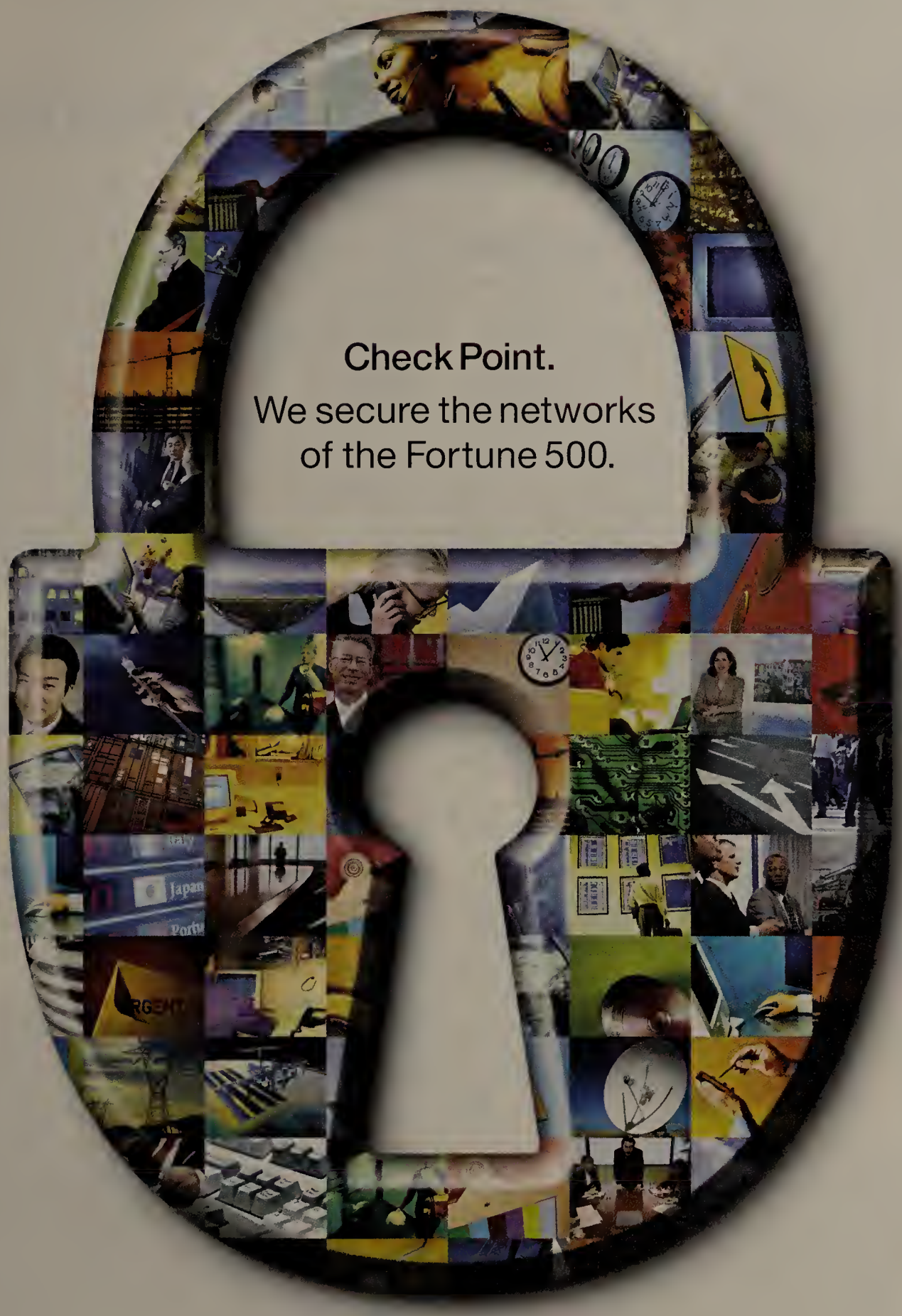
Less isolated were the visible problems with news sites such as cnn.com. These sites, or the links to them, quickly became overloaded as office workers tried to find out what was happening. Most problems were fixed within a few hours as the sites did what they should have done in the first place and distributed their content among a number of redundant servers around the network. The same basic problem struck South Africa when it turned out that the country's name server was not replicated as it should have been, but instead was just located in New York.

The report specifically does not attempt to predict how the Internet would perform if its infrastructure was the target of a sustained attack. One hint came a few weeks ago when the root name servers were subjected to a denial-of-service attack. In this case there was little effect, but we might not be so lucky in the future unless some of the known vulnerabilities are addressed.

This type of objective analysis of such a terrible day does make me feel funny; it's a bit like the Federal Aviation Administration accident investigators saying the engines were working just fine when a plane crashed. It is needed, but it must not overlook the human cost.

Disclaimer: No joke this week. I am not speaking for the university in the above.

Bradner is a consultant for Harvard University's University Information Systems. He can be reached at sob@sobco.com.



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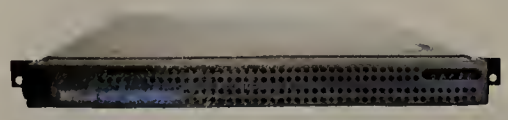
Latis rolls out wireless LAN protection

■ BY ELLEN MESSMER

SUPERIOR, COLO. — Latis Networks has introduced an 802.11 wireless LAN security gateway that enforces user authentication and continuously scans the wireless network to block computer worms and Web attacks.

Installed between wireless access points and wired LAN, the StillSecure Border Guard Wireless appliance controls wireless LAN access for users. It competes against similar wireless LAN gateways from Bluesocket, Cranite Systems and ReefEdge. But unlike these vendors, Latis focuses on providing intrusion detection and some content filtering for the 802.11 access points.



Unlike competitors' products, the StillSecure Border Guard Wireless appliance provides intrusion detection and some content filtering for 802.11 access points.

"It can filter out pornography and content based on keywords. It also lets you see the devices on the wireless network," says Al Maxey, a network engineer for MDA Technologies, a contractor installing the Latis wireless LAN gateway at Potomac Hospital in Woodbridge, Va., which uses a mix of wireless LAN access points from Cisco, Linksys and SMC Networks.

This network-discovery feature of the StillSecure Border Guard Wireless appliance is intended to flexibly meet demands for wireless access, says Mitchell Ashley, vice president of engineering and CIO at Latis. "By scanning the network to keep track of all the authorized access points and users, you can set a policy defined as either 'no access' or 'Internet-only' access," he says.

The Internet-only control would let a visitor in a conference room, for example, gain access to the organization's wireless LAN network, but prevent the visitor from accessing anything except the Internet. The gateway's control also would let restrictions be placed on a subset of the LAN.

The Latis intrusion-detection engine for the wireless LAN gateway can check for about 1,800 signature-based attacks, such as Nimda or Bugbear worms, but it's not a substitute for running antivirus software, Ashley acknowledged. The StillSecure Border Guard Wireless product, which costs $10,000, also can be purchased as software to be installed on any Intel-based platform. It comes with a Web-based management console for administration of the wireless security policy to multiple StillSecure Border Guard gateways.

Latis: www.stillsecure.com

Spam

continued from page 27

problem because of the potential legal liability associated with pornographic spam and concerns about the negative effects on end-user productivity. High volumes of spam are a drain on network resources such as e-mail server capacity, Internet bandwidth and e-mail archives.

Dave Giaramita, an e-mail consultant working on a project for an energy conglomerate in San Ramon, Calif., sees "staggering" amounts of spam each day. The company has 80,000 e-mail recipients on its three-tiered e-mail system, which uses Sendmail's software as its Internet e-mail gateway, Tumbleweed's SecureMail 5.0 as a spam blocker and Microsoft Exchange for its e-mail servers.

Spam blocking 101

Giaramita says the company receives an average of 328,000 inbound e-mail messages each day and that 236,000 of them — or 72% — are blocked as spam. A black list blocks 151,000 messages before they enter the company's e-mail system. (These are often the same message sent to multiple users.) Tumbleweed's software catches another 85,000 spam messages per day.

"I estimate it takes about 12 seconds to process a single spam message," Giaramita says. "At the rate we're seeing, each employee would spend about five-and-a-half hours a year processing spam. That's 233,000 hours a year of employee time spent processing spam."

Giaramita says that if the company didn't block spam, it would cost $14 million in lost productivity. He arrives at this figure by determining that the volume of spam would require 147 full-time employees to process, and that these employees would earn $50 an hour.

"We'd also have to increase our e-mail bandwidth and our disk servers," Giaramita says adding that the company already uses 10 terabytes of disk storage to house its domestic e-mail.

To catch all the spam, the company has set up seven dedicated Tumbleweed servers. These servers were installed in January, when end users started complaining about the amount of spam.

"Tumbleweed is getting about 90% of the spam coming through," Giaramita says. "Tumbleweed costs us about $100,000 a year, including support and hardware depreciation. But the return on investment is absolutely worth the cost."

Giaramita quarantines spam for a day in case an important message accidentally is blocked, which happened once with a contract that used the phrase "at no cost to you."

"Our false positive rate is very, very low," he adds.

Messaging vendors are improving antispam filtering to address the problems e-mail administrators such as Giaramita see each day. Antispam features are being added at every point in the system: at Internet gateways, between gateways and e-mail servers, at e-mail servers and at desktops.

The most common approach is to put antispam software behind the firewall to filter inbound Internet messages before they are sent to corporate e-mail servers. Providers of message transfer agent software, including Sendmail and Sun, have beefed up their antispam filtering as has message appliance vendor Mirapoint.

Sendmail in November announced an antispam filter built upon technology from Elron Software, which sells Internet content filtering products. Similarly, Mirapoint last month added antispam filtering as an option to the operating system that its mail gateway appliance uses.

Sun has offered antispam filtering for years, including support for black lists and third-party antispam software providers such as Brightmail and Trend Micro. In the first quarter of next year, Sun plans to add antispam capabilities to its instant-messaging server software.

Vendors of special-purpose antispam software also are improving their capabilities. Brightmail in October updated its enterprise offering by improving its accuracy and adding support for Windows 2000 instead of only Solaris. Also in October, Tumbleweed improved the antispam capabilities of its Messaging Management System, which now scans HTML code embedded in messages to look for links to spam sites.

Antispam contingent

E-mail server software vendors Lotus and Microsoft are adding antispam capabilities to provide companies with an extra layer of protection. Lotus recently added support for black lists and antispam rules to its Domino 6 server software.

Microsoft says the next version of Exchange, code-named Titanium, will support real-time black lists and spam "beacon" blocking in Outlook Web access and Outlook 11 clients. Beacon blocking prevents the download of images that send a beacon back to the spammer to verify an address as legitimate.

Antispam filtering software for the desktop also is available, but few companies use it. Instead, desktop packages from vendors such as Cloudmark, MailFrontier and Sunbelt Software are geared toward home computer users.

Regardless of where e-mail administrators place spam filtering, they're getting positive feedback from end users as the volume of spam declines.

Dave Leannah, IT director at Peltz Group in Milwaukee, installed Clearswift's new SpamActive filter on his company's e-mail system a month ago. The filter is an add-on to Clearswift's Mailsweeper for Simple Mail Transfer Protocol and is free to Clearswift support customers.

"I kept getting more and more complaints from end users who came in to work and had 30 messages of spam instead of the five messages they used to get," Leannah says. "Women were getting this horrific pornographic stuff and were calling me to say that it embarrassed them."

Leannah runs an Exchange e-mail system with 130 users. He now blocks 300 to 350 spam messages a day, and 800 to 1,200 over the weekend. ■

eRoom

continued from page 27

used by anyone," MacKrell says. He also notes that CAD vendors are adding collaboration to their wares, such as the alliance 3-D design software maker Parametric Technology made with Groove Networks in February.

With eRoom, users can load a CAD file onto the eRoom server and share it with anyone with a Web browser, given that the Viewer for CAD Visualization is a server-side Java application. Users can pan, zoom and rotate a drawing; break down assemblies; and view component pieces of a drawing. Users can make annotated drawings and print them out. The CAD files can be incorporated into the access control, version tracking, notification and workflow capabilities of eRoom.

"Text files are not enough for collaboration," says Bryan House, product marketing manager for eRoom. "We are expanding from a horizontal solution to a vertical industry with specific applications."

Viewer for CAD Visualization comes in four versions ranging from 2-D view-only with pricing starting at $100 per seat to 2-D/3-D view with annotation support that starts at $1,500 per seat. The software is available now. ■

Working together

The visualization/collaboration market generated

$220M

in revenue in 2001 and has a projected growth rate of 25% for 2002, according to CIMdata.

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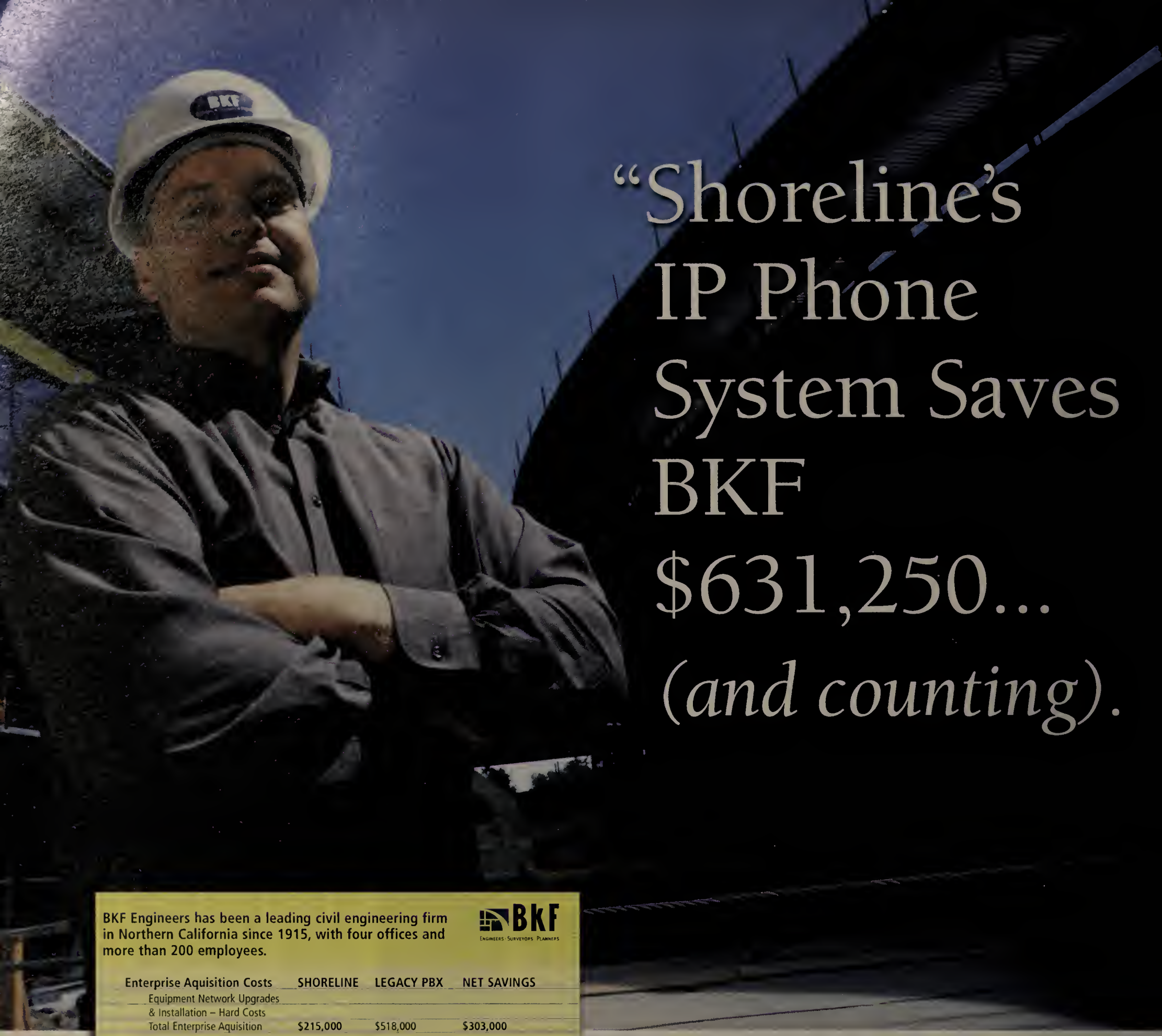

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Equipment Network Upgrades & Installation – Hard Costs			
Total Enterprise Aquisition	$215,000	$518,000	$303,000
Annual Costs			
Management	$2,000	$25,000	$23,000
Maintenance	$16,250	$48,000	$31,750
Long Distance	$8,100	$19,000	$10,900
TCO Per Year	$26,350	$92,000	$65,650
Total Savings Over 5 Years (Acquisition plus annual TCO)			$631,250

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Sprint buffs up managed data offerings

■ BY DENISE PAPPALARDO

KANSAS CITY, MO. — Sprint announced last week that it has revamped its managed data service offerings by simplifying the product set and pricing while extending the reach of its management capabilities.

The carrier now offers two service umbrellas, called Managed Network Service Express and MNS Custom. Both include monitoring and management of routers, switches, hubs and servers connected to frame relay, IP, ATM or private-line connections.

MNS Express is for customers with five to 50 devices who need monitoring and management of their network and devices. The service includes proactive alarms and notifications that are set up based on customer-dictated thresholds, network fault isolation and fault resolution. The carrier also will monitor the availability of key applications based on customer specifications.

For instance, if a user says its e-mail traffic should be delivered within 50 msec between Los Angeles and New York, Sprint can test that application and report if performance changes.

A key feature that Sprint offers is multicarrier network and device monitoring, says Mickey O'Dell, director of managed services, at the carrier. Sprint will manage a customer's entire WAN, including network connections from other carriers.

"Sprint is somewhat enlightened in supporting management over multiple carrier networks," says David Willis, a vice president at Meta Group. "The management support does not include the same [service-level agreements that Sprint offers], but the management arm is closer to what users would do if managing their WAN in-house."

Willis says Sprint is the only carrier offering management support over other providers' connections as a standard service feature. This lets customers use Sprint as their primary data carrier, but also use other providers for backup or network diversity and yet still view all connections using one management platform, he says.

Network diversity is the "general tenor in the market today," he says.

Sprint has simplified its pricing. While the carrier would not offer specific rates, it says customers pay a flat monthly fee that is based on the number of devices monitored. "Customers pay the same price for a Cisco 1700 router as they would for a Cisco 7500 router," O'Dell says.

While the standard offering includes monitoring and management, O'Dell says the carrier offers a less-expensive monitoring-only version of MNS Express.

MNS Custom includes the same features as MNS Express, but users can add management features for multiprocotol support or applications such as voice over IP.

While users can customize much of their MNS Custom network setup, O'Dell says Sprint is focused on fast installations. Sprint can accomplish timely installations because users primarily will work from a "set of building blocks" that Sprint can install and set up quickly, he says. ■

Service makeover

Sprint has refined its Managed Network Services under three categories.

Fault isolation management:
- Proactive alarming and notification.
- Network fault isolation.
- Fault-resolution management and reporting.

Monitoring and management:
- CSU/DSU, router, switch, hub implementation management.
- Configuration management.
- Change management.
- Application and server monitoring.
- Third-party WAN transport device monitoring.

Service initialization:
- Network design.
- Network engineering.
- Network implementation.

Short Takes

■ **Telstra,** the largest service provider in Australia and New Zealand, recently announced it is deploying **BroadSoft's** voice-over-data products in its network. The carrier is rolling out BroadSoft's BroadWorks servers and applications to offer businesses hosted voice-over-data and voice VPN services. The services will let users support IP phones, legacy PBX and key systems on one data network. Telstra says these services will be rolled out by year-end.

■ Research firm ARS says **promotional service rates for broadband services are coming down,** but not by much. Promotional rates for cable modem services averaged $42.32 per month in the third quarter. In the second quarter, the average rate was $42.74 per month for a one-year contract. DSL service rates are higher, but have come down more, by 6%, in the last quarter. Promotional rates for DSL services average $44.52 per month, while last quarter promotional rates averaged $47.42 per month. The rate decreases are notable because rates primarily went up throughout 2001, ARS says.

SBC unifies offerings across U.S.

■ BY MICHAEL MARTIN

SAN ANTONIO, TEXAS — SBC Communications last week rolled out standardized national data services, letting SBC business customers get the same speed, service level and pricing options across the U.S.

Until last week, SBC's pricing, speeds and service-level agreements varied even within SBC's four primary regional units — SBC Southwestern Bell, SBC Pacific Bell, SBC Ameritech and SBC Nevada Bell.

"Now a customer with offices across all four territories and across the country can get the same options in terms of ordering, provisioning, speeds and pricing," says Mark Fischler, vice president of product management for data networking at SBC.

The standardized plans will cover frame relay, ATM and private-line services. Currently, long-distance options are available only in SBC's Southwestern Bell territory. Long-distance service will be offered as an option in SBC's SNET territory later this year. The other regions will be added as long as SBC wins more long-distance approvals from the Federal Communications Commission.

National aspirations

Enhancements to SBC's data offerings include:

- Standardized speeds and prices across the country.
- Business-recovery services, including redundant routing and disaster recovery.
- Better service-level agreements with improved latency guaranteees.

As an example of how the standardized plans will help customers, Fischler points to California, where SBC customers wanting fractional DS-1 services previously could choose only between 128K and 384K bit/sec speeds. Now those customers can choose between 128K , 256K , 384K , 512K and 768K bit/sec.

SBC also continues to deploy its national backbone network. When it's finished, the network will be fully redundant with a core speed of OC-192. SBC plans to use Multiprotocol Label Switching to let the backbone carry a variety of service offerings.

The backbone should be completed by mid-2003, Fischler says. A lack of FCC approval for long-distance services in all of SBC's local markets is holding the provider back, he says.

In addition to the standardized service schemes, SBC now offers customers business-continuity plans. The plans include features such as alternate routing and disaster recovery.

SBC's long-distance strategy will mirror the previously announced plans of fellow regional Bell operating companies Verizon and BellSouth. SBC will focus on selling long-distance services to companies that are already SBC local customers. The national backbone and standardized plans will let SBC offer long-distance to those customers' branch offices anywhere in the U.S., once SBC wraps up its long-distance approvals.

SBC: www.sbc.com

EYE ON THE CARRIERS

Johna Till Johnson

The road toward successful streamlining

Several of my recent columns have touched on the importance of lowering operational costs. Most recently, I discussed the crushing operational overhead that many telephone companies endure (60% to 70% of service costs are because of operational overhead).

The challenge isn't limited to service providers. A majority of companies we surveyed for an upcoming report on Web services indicate that reducing overhead is a critical challenge for them. "Mission No. 1 is efficiency — driving the unit cost of support down. Everything we do is focused on that," says the CTO of a large financial services firm.

Strategically deploying technology can help a company achieve this, but it's not the whole story. Successful operational streamlining also requires effective benchmarking and a supportive culture. Let's look at each in turn.

Strategic technology deployment. A significant percentage of companies surveyed told us that Web services are an effective way to lower operational costs. By centralizing accounting or customer service via Web services, a company can get away with fewer accountants or customer support personnel. One organization cost-justified a multimillion-dollar rollout of Web services on the grounds that it let them reduce the accounting department by 500 positions.

However, there's a catch: If the cost-savings are outside the IT budget, ensuring that they actually accrue requires effective benchmarking and a companywide alignment of goals. That brings us to the next two points.

Effective benchmarking. Once a potential cost savings has been identified, an organization needs to have the processes in place to measure the savings. This is a lot harder than it sounds because it might be considerably out of the traditional scope of IT departments.

If a new technology has been deployed with the goal of reducing headcount in, say, accounting, someone has to validate that the head-count reduction occurred and that it didn't result in unintended costs. Most organizations don't perform this kind of benchmarking regularly. Worse, most aren't even sure who should be doing it.

Goal alignment. Regardless of who performs the benchmarking, there has to be companywide agreement that an initiative is worth the effort. That means ensuring that everyone — lines of business, IT and non-IT centralized services — commit to realizing the promised results. "If the business unit really wants something to be done, they're going to have to belly up to the bar. If they claim that it's going to save them a million dollars, the money disappears from their budgets. If they aren't willing to sign up for it, it doesn't get done," says the CIO of one manufacturing company.

Most organizations are only about 33% of the way there. They've mastered the art of deploying strategic technologies but are wrestling with effective benchmarking and goal alignment. For more tips on how they're coping, stay tuned.

Johnson is president and chief research officer at Nemertes Research, a technology research firm. She can be reached at johna@nemertes.com.

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■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Q A

VocalTec head says VoIP adoption coming slowly to U.S.

The past two years have been tough for VocalTec: Revenue dropped from $41.9 million in 2000 to $28.4 million in 2001, and through three quarters of this year sales are $13.1 million. Despite this, the Israeli company expects conditions to improve as more carriers adopt voice over IP, first along international routes and later in national and local networks. VocalTec Chairman and CEO Elon Ganor recently spoke with Network World *Senior Editor Tim Greene about the prospects for service provider IP telephony.*

How do you view U.S. carrier interest in voice over IP?

The advantages that VoIP provides are really in reduction of operating expenses. But in the times that we live, most companies are looking for new sources of revenue and not necessarily just in reduction of operational expenditures and capital expenditures. So on domestic long-distance, we have not seen — we, the VoIP industry — a tremendous push within the country.

What we are seeing is that the initial drive is really in markets in which you see deregulation happening with new commerce coming in as competitive or alternative carriers. Moving forward, we are starting to see applications such as prepaid calling cards and additional ones that can be done much easier, quicker and sometimes only on VoIP systems. So we are starting to see carriers that are looking at VoIP for substitution of traditional infrastructure. It's not moving very fast, but it is moving. It is, without any doubt, coming.

When?

The majority of experts said by 2006 50% of the world's traffic will be using VoIP. I talked to carriers, the large carriers, and I can tell you that their view is similar.

What will drive the major local carriers to VoIP?

Regional Bell operating companies with existing infrastructure have less need to compete for a while because of the death of the competitive carriers. The urge to protect is not as strong as it was. On the other hand, though, you see that the fixed-line guys are losing quite a bit on the traditional fixed line. SBC Communications showed a 9% decline in the number of fixed lines in 2001. So the real competitor for them is the mobile.

If you want to compete against home lines with mobile phones, the only way to go is packetized telephony. It's a question of scalability, of gaining confidence that the softswitch-based systems can really replace traditional switches.

What should corporate telecom people be looking for in terms of VoIP? How should they prepare for this eventuality?

They will start adding the voice communication for their organization on the data network. The traditional carrier will be acting for them as an application service provider providing them with maintenance — and maintenance means the maintenance of dialing plans, supporting of the equipment just as they do for PBXs and so forth — but generally the voice will be running on their own corporate data network. They may expect a very significant reduction for their voice

See VocalTec, page 40

Short Takes

■ **Lucent** and **Sun** last week announced an expansion of an **alliance to bundle their products** for wireline and wireless service providers. The companies say they will work together in Asia, Europe and Latin America, and have established sales resources and other operational practices to make service provider sales of their combined offerings as a managed service offering more efficient. This marketing initiative, which started in North America, is now in place on a global basis across all lines of business within both companies, they say. The Lucent and Sun alliance is pursuing joint sales activities in the areas of IP Centrex, CRM, mobile high-speed data, and business-continuity systems and services.

Juniper's MINT offers profitable data

■ BY JIM DUFFY

SUNNYVALE, CALIF. — Juniper Networks this week is unveiling a plan designed to let service providers profitably address underserved markets without commoditizing their offerings.

Supporting the framework are several new products Juniper will roll out later this month and early next year.

Juniper's concept is called the Model for Integrated Network Transformation (MINT). MINT attempts to let service providers address large and niche markets by scaling their offerings to appeal to consumers, low-end businesses, and mid- to high-end businesses.

But with scale comes commodity pricing and lack of profits. So MINT also proposes a model whereby service providers generate profit through service customization and added value as they scale their services to address markets that are untapped or underaddressed.

"We want it to be a framework for the industry," says Christine Heckart, vice president of marketing for Juniper. Heckart says MINT applies techniques considered "best practices" for voice within the data network industry.

Juniper says it would like MINT to create demand for Juniper products by demonstrating how service providers can derive profitability from data services, especially IP services. Research firm RHK in August showed that while Internet traffic grows at an annual rate of 100%, revenue grows at only 17%.

The MINT framework encompasses basic transport and connectivity at its foundation, and policy and control at its peak. In between are resource segmentation and packet processing. The layers of MINT are interdependent.

The transport and connectivity layer, naturally, encompasses Juniper's edge and core IP routers. The resource segmentation layer suggests creation of a service independent resource pool by using Multi-protocol Label Switching (MPLS) to partition ATM, frame relay, private line, voice, IP and public Internet assets into virtual overlays.

The IP overlays would support the scal

MINT, page 40

Why transform?

Juniper's rationale for its MINT framework.

- **Current revenues under pressure** from a facilities-centric model, which:
  - Is capital-intense.
  - Forces scale addiction.
  - Encourages commoditization.
- **New services hard to roll out.** Today's services are inflexible and difficult to up-sell. New markets are underaddressed because of inappropriate operations models.
- **Profit-centric model needed** to resolve scale/profit conflict and inject a fresh operations model.

Optical subsets up while market slumps

■ BY JIM DUFFY

Leading research firms recently released figures and made statements indicating that certain subsets of the worldwide optical-hardware market are experiencing healthy growth while the overall market languishes.

In the long-haul, revenue will decrease by 50% this year from last and remain relatively flat until about 2007, according to Probe Research. A slight improvement might occur in 2004 but not enough to reach 2001 revenue levels, when long-haul accounted for 51% of the total optical market, Probe says.

Infonetics Research, meanwhile, says that after declines in 2003 and 2004, worldwide revenue for the optical-hardware market overall will be slightly up in 2005.

For the third quarter, the worldwide optical-hardware market was down 14% from last quarter, according to Infonetics and its competitor, Dell'Oro Group. Both companies tally long-haul and metropolitan wavelength division multiplexing (WDM), SONET/synchronous digital hierarchy (SDH) and optical switching systems, while Infonetics adds passive optical networking (PON) devices to its optical hardware mix. Infonetics says the worldwide revenue totaled $2.26 billion. Dell'Oro's count, which doesn't include PON devices, had it at $1.64 billion.

The optical-hardware market is and will continue to be propped up by the metropolitan optical systems, Infonetics says, which comprised 64% of optical hardware sales in the third quarter. Within that market, intelligent metropolitan systems — which at $1.6 billion in the third quarter accounted for 69% of metropolitan optical revenue and 72% of all optical-hardware revenue — will experience the most growth, the firm says.

Infonetics defines intelligent optical gear as data-aware equipment with remote configuration and remote-service provisioning that can be deployed in mesh, star and ring topologies for rapid buildout and revamp. This contrasts with legacy SONET/SDH equipment that only can be deployed in a ring configuration, is optimized for voice and TDM traffic, requires multiple systems for cross-connection and add/drop multiplexing functions, and requires lengthy and cumbersome circuit provisioning.

While the total metropolitan market is down 8% in the third quarter, intelligent metro is down only 5%, Infonetics says. SONET/SDH still outpaces WDM sales by a more than 2-to-1 ratio, representing 70% of total spending in the third quarter, while WDM is 29% and PON 1%, the firm says.

SONET/SDH equipment accounted for 67% of the total market in the third quarter, according to Dell'Oro. There also was some changing of the SONET guard in the third quarter: Lucent and Siemens vaulted to the top of the list in SONET/SDH from middle of the pack.

Lucent jumped to No. 1 from No. 3, and Siemens leaped to No. 2 from No. 5. Lucent replaces Alcatel in the top spot while Siemens supplants Nortel at No. 2.

Siemens was the only vendor with sequential growth in SONET/SDH. The vendor's revenue increased 19% from the second quarter, while Lucent's declined by 13%, Dell'Oro says. Nortel's SONET/SDH revenue declined 22%.

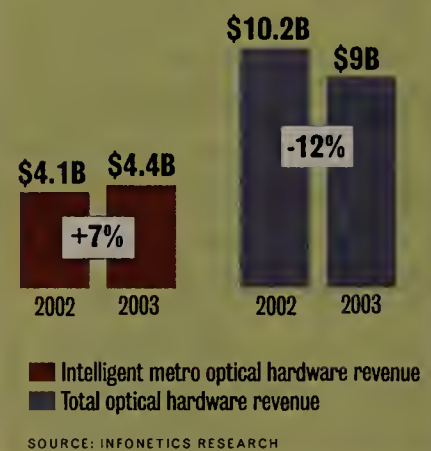
Looking to next year, Infonetics expects a 7% year-to-year growth in intelligent metropolitan optical revenue — from $4.1 billion to $4.4 billion — while revenue in most optical categories will decline.

The total optical market will decline 12% in 2003 from 2002, from $10.2 billion to $9.0 billion, according to Infonetics.

Why all the activity in metropolitan and intelligent metropolitan optical? Infonetics and Probe say that the long-haul optical networks of carriers are built out or even overbuilt because of unrealistic projections in the growth of IP traffic. Probe also notes that several large long-haul carriers are bankrupt or financially unstable. This will lead to consolidation in the carrier and optical equipment vendors ranks, Probe says. Other factors affecting long-haul optical and the industry as a whole are investor distrust in telecom service providers and their equipment vendors. ■

Internal growth

The intelligent-metro subset of the worldwide optical hardware market is expected to grow over the next year, while the overall market is expected to decline.



SOURCE: INFONETICS RESEARCH

MINT

continued from page 39

to address lucrative underserved markets, Juniper says, while the consolidated overlays — ATM/frame, private, voice and others — would collapse "conventional" services for more mainstream markets.

The packet-processing layer would filter, prioritize, encrypt and classify packets according to user need, and the policy and control layer would map users to customized services and to back-office accounting and billing applications. For example, a user request for on-demand video would activate increased bandwidth and packet priority, Juniper says, while generating the associated billing records.

Products associated with the MINT framework include:

- A second generation of ATM physical interface cards (PIC) for Juniper M-series and T-series routers, and IPv6 capabilities for the vendor's ERX edge router.
- IPv6 VPN and transparent LAN support on the routers.
- New PICs with a processor dedicated to packet queuing.
- Integration of third-party operations support system applications with Juniper's SDX policy manager.

The so-called ATM2 PICs include one- and two-port OC-12 and two-port OC-3 interfaces. They perform per virtual circuit/virtual path shaping and rate limiting, queuing and classification features such as weighted round robin and random early discard, and Layer 2 to Layer 3 priority mapping across MPLS backbones.

The IPv6 addition to the ERX router supports Version 3 of Open Shortest Path First protocol. Juniper already has IPv6 support for Border Gateway Protocol and Intermediate System-to-Intermediate System routing protocol.

Transparent LAN capabilities will emerge next year in Juniper routers to support Layer 2 virtual private line service offerings from carriers.

The PICs with the new Q-series queuing processor include one-port channelized OC-12, 10-port channelized E-1 and four-port channelized DS-3 to emerge in the first quarter of 2003; and Gigabit Ethernet at a future date.

Heckart acknowledges that MINT will be one of several service provider profitability frameworks to emerge from a handful of vendors. Cisco already has articulated its desire to take service providers beyond commodity connectivity and into value-added services.

She says that there's "still a lot of work to do" with regard to integration of non-Juniper products into MINT. Yet, she says that implementing even one of four operational layers of MINT will be a "leap" from where service providers are today in deriving profitability from data services.

Analysts say Juniper might be best served by focusing on its internal product-line integration. Juniper has yet to say how it plans meld the Unisphere Networks edge routers acquired last May — and upon which much of MINT relies — cohesively with its M-series and T-series routers.

"Juniper needs to address in more detail how it plans to reconcile the ERX series with the M-series, since rivals will accent the emerging overlap between the two lines to sow confusion about the Juniper IP service edge proposition," said Ron Westfall, an analyst at Current Analysis, in a recent report. ■

Q A

VocalTec

continued from page 39

costs. Today, they are paying quite a bit of money on long-distance, domestic phone calls. Now some companies are ... pushing a displacement of PBXs by introducing IP PBXs. Most organizations don't like that today because it is a displacement of a reliable product that they like which has not amortized itself yet. Our proposition to them would be to add on a customer premises equipment gateway as an adjunct to their PBX. Then suddenly from your regular phone in the office, you may dial four or five digits to any employee in the organization worldwide, without extra cost.

What should the concerns be about voice quality? Aren't service-quality guarantees necessary?

They are necessary for Cisco to be able to sell their products. Obviously, they want to differentiate, but the fact of life is that there are ways of guaranteeing and improving quality using the public Internet that will continue improving.

Can those ways of improving it be done from the edge?

Yes. The system is checking connection quality by pinging delay and congestion on that particular Internet route. It has the time to divert the call via another channel over the open Internet, or if it still cannot find anything it will bounce it back onto a switched network.

What can the dialing switch do to determine what path traffic takes through the Internet?

You have different gateways in different locations. And the gatekeeper is doing mapping so it can determine where to route the call if another route is congested. ■

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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

ESP over Fibre Channel secures SANs

■ BY GANESAN CHANDRASHEKHAR

Storage-area networks were once closed and relied predominantly on physical protection to ensure security. However, as SANs become more distributed and remotely accessible, security concerns are growing.

Fibre Channel has limited security services. Commonly used schemes such as zoning and logical-unit-number masking provide some level of access control, but without authentication of hosts or users connected to the fabric, they cannot prevent host spoofing, message-replay attacks or unauthorized entity fabric access.

The Fibre Channel standardization body (T-11) has initiatives to enhance Fibre Channel security by defining protocols to address access issues — supporting authentication, data encryption and management of security information.

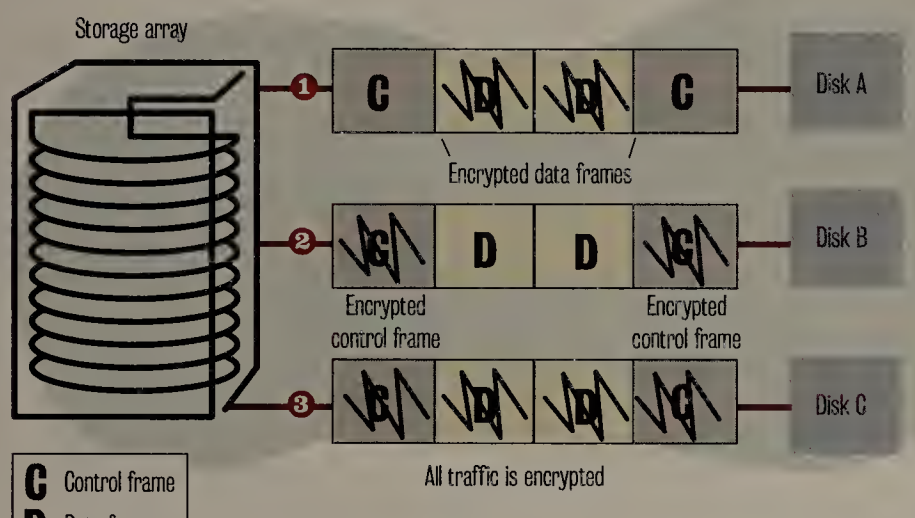
One such scheme is Encapsulating Security Payload (ESP) over Fibre Channel, which has become the de-facto way to secure transmissions in the Fibre Channel network. This scheme is flexible enough to let administrators decide which type of messages (control frames or data frames) to secure.

ESP can secure communications between any two entities in a fabric by providing message authentication and optional confidentiality. It is widely deployed in the IP world, and the IETF iSCSI proposal specifies it for link security.

Fibre Channel specifies a maximum transmission unit of 2,112 bytes, and longer transfers are segmented into sequences. Typically, storage protocols use 2,048-byte frames, so there is some headroom for the ESP header and trailer.

Solving security concerns

In an untrusted Fibre Channel network, the end points implement Encapsulating Security Payload (ESP) to encrypt traffic.



There are three options with ESP over Fibre Channel:

1. Control frames are not encrypted, but data frames are. This requires a hardware-based approach.
2. Control frames are encrypted, but data is not. This is a cost-effective software solution that works with host bus adapters.
3. Both control frames and data frames are encrypted. This requires hardware on all nodes.

To deter session-key brute-force attacks, ESP implementations must have key lifetimes based on amount of data transfer and number of packets allowed per key. Rekeying enables an automatic and secure exchange of new keys.

At the recent T-11 Fibre Channel-Security Protocols committee meeting, the shared-password protocol Diffie-Hellman Key Encryption Protocol-Challenge Handshake Authentication Protocol (DH-CHAP) was unanimously accepted. This shared-password rekeying scheme does not need certificates, but requires acceptable password practices (128 bits and nontext characters) to avoid attacks. Shared-password administration can be simplified by offloading to a centralized Remote Authentication Dial-In User Service device.

By deploying periodic host authentication and authorization schemes for all fabric entities, spoofing can be prevented and access can be restricted to defined storage resources.

The most-secure deployment is achieved when each node in the SAN implements ESP for all traffic, control and data. However, this might be an expensive approach, because it requires hardware assistance from all nodes because of performance impact.

A software solution (HBA driver, for example) for message authentication is cost-effective when only control frames need to be secured — not encrypting application data.

If data path security (full encryption) is desired, it will be application-dependent. Transaction processing applications are latency sensitive, while e-commerce databases or data mining require high throughput. Latency might not affect secondary storage applications. As such, a hardware-based approach would best meet all these performance requirements.

Key management will be an important consideration. For example, high Fibre Channel data rates quickly wrap over the ESP sequence-number window and prompt frequent rekeying. The Fibre Channel standards body will need to address this issue, possibly by increasing the sequence-number window size. Secure mechanisms for storing private keys and secret passwords at the host are required, which might include using protected memory or smart cards.

ESP is a well-defined and well-understood protocol for securing data in flight. DH-CHAP complements ESP by providing a needed entity authentication and key exchange mechanism for Fibre Channel SANs. Fibre Channel-Security Protocol does not address securing data at rest. This is an outstanding issue as corporate-sensitive, trusted or regulated persistent data is taken off-site or consolidated via data replication and backup.

Chandrashekhar is a technical staff member at NeoScale Systems. He can be reached at shekhar@neoscale.com.

Ask Dr. Internet

By Steve Blass

We have a 300-workstation network with a Windows 2000 server, two domain controllers, a SQL 2000 database server, Linux Web server and ISA firewall. We've been asked to segment the database server onto a separate network so only certain staff members can access it. We also want to install a second ISA server and create an internal demilitarized zone. Some staff members use the same computers all the time, so we need to allow access to the DMZ based on client IP address. For those who use different workstations, we want to create VPN connection icons on their desktops so they can dial into the DMZ network.

How do we set up the DMZ ISA server to allow access based upon client IP addresses? Also, how do we configure it so servers inside the DMZ can have full access to internal network resources while keeping out unauthorized connections from the network?

Start ISA Management and enable packet filtering and IP routing using the properties dialog in the IP Packet Filters section under Access Policy for the ISA server name. Configure your filtering rules to define the client and server traffic allowed across the internal DMZ network boundary.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

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Data based on eTesting Labs Windows XP Reliability Study

GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

ISAPI, ISAPI filters and finally ASP

A correction is in order: Two weeks ago we wrote that "the Windows Task Scheduler ... only allows a minimum repeat interval of 24 hours," and we were wrong. Despite having used the scheduler several times, we moved too fast to notice the checkbox that reads: "Open advanced properties for this task when I click finish." Had we done so we would have found that we could schedule down to minutes. Of course we couldn't schedule "the second Tuesday of every month" but that's a different complaint.

Anyway, last week we started to talk about Microsoft's Active Server Page (ASP) technology, got into the company's Internet Server Application Programming Interface (ISAPI) and wound up in a discussion about thread-safe programming. Who could ask for more?

In our discussion of thread-safe programming, we covered the issues of race conditions, deadlocks and priority failures but had to stop before we made it to the problem of starvation failures.

This final requirement for thread-safe programming is about avoiding the situation that occurs when threads cannot execute within whatever limiting period is required. For example, a thread that provides data to a client (for example, a response to a request from a Web browser) might have to do so before the client (the browser) times out. Starvation occurs when that timeout is exceeded (and the user of the browser gets a 404), because the thread doesn't get enough time to run to completion and provide a response.

So a thread-safe environment is what ISAPI attempts to create to support multiple requests from Web clients to minimize resource usage. Typically, ISAPI is significantly faster than the same process implemented using the Common Gateway Interface (CGI) not only because of threading, but because ISAPI DLLs don't get loaded and unloaded for each request. CGI, on the other hand, requires a new instance of the CGI application to be loaded when each request is received and then unloaded when it finishes (yes, there is FastCGI but that's not a great improvement or generally applicable).

ISAPI has some interesting advantages over CGI. And one thing that can be done with ISAPI is to create ISAPI filters, custom

A thread-safe environment is what ISAPI attempts to create to support multiple requests from Web clients to minimize resource usage.

DLLs that are called for every HTTP request (rather than being called specifically) before the Web server does anything with the request.

This means that an ISAPI filter can be used to do anything with HTTP requests that ranges from controlling user access and logging activity to responding to the request in any way you please.

ASP is a technology based on ISAPI filtering that is designed for programming Web applications. The ASP ISAPI filter, called ASP.DLL, operates only on pages that have the ASP extension, which it identifies by examining each HTTP request. If the request is for an ASP file, then ASP.DLL gets involved.

On receipt of a request for an ASP the ASP module examines the page contents, determines which scripting languages to use, loads the DLLs for the scripting language interpreters, passes the scripts to the interpreters and passes the results (if any) to the Web server to be sent back to the device that made the request.

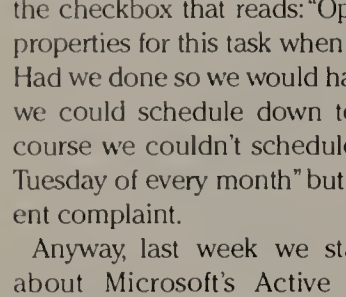
Here's a simple ASP page, hello.asp:

```
<%@ LANGUAGE = VBScript %>
<html>
<head>
<title>Yo-yo, ding-dong.</title>
</head>
<body>
Hello World! The server's time is now <%=Time()%>.
</body>
</html>
```

This pathetic piece of code starts off by telling the ASP handler that we're using VBScript. This is indicated by <%@ LANGUAGE = VBScript %>. Anything in the "<% ... %>" tag is considered to be ASP code.

The only thing that this ASP page actually does is to replace the tag "<%=Time()%>" as the page is interpreted with the server's time. The result in the requesting browser is a window titled "Yo-yo, ding-dong." that contains the text "Hello World! The server's time is now 3:44:53 p.m."

Next week, we'll try to get more exciting. Requests to gearhead@ gibbs.com.



CoolTools

Quick takes on high-tech toys

By Keith Shaw

Chilling out at Comdex

The recent Fall 2002 Comdex show in Las Vegas was a rather low-key event; it seemed that more people wanted to do business than watch any over-the-top booth demonstrations (nary a bikini or magician in sight). Still, there was plenty to get excited about in the world of gizmos and gadgets. Here's a list of the coolest stuff I saw at the show:

BlackBerry 6510 from Nextel: This new phone, PDA and wireless e-mail combination device is practically here — shipments to Nextel channels begin this month and will be generally available by next month. The device includes Nextel's Direct Connect walkie-talkie feature (the button is on the top) and runs on Nextel's national network. Other features include an embedded keyboard that connects you to your corporate e-mail (Microsoft Exchange or Lotus Notes), a built-in speaker and microphone (you can hold the device up to your ear like a mobile phone), and Java capabilities that let you download business applications (or games) to the phone.

The device costs $500 (plus monthly service fees); go to www.nextel.com/blackberry for more information.

Microsoft Smart Displays: I'm still on the fence on whether these displays are the coolest things in years or if it's just hype. The devices are cool, yet the price might be too high for them to make an impact.

The Smart Displays work like this: They connect to your desktop PC and act like a monitor. If you want to move to a different room, you can disconnect the monitor, and it acts like a flat-panel tablet (you can use a digital pen/stylus to write on the screen). The CPU is still in the PC in the first room, but the monitor uses 802.11b wireless LAN technology to send signals back.

The first company out of the gate with a Smart Display is ViewSonic, which plans to sell its airPanel devices for $1,000 (for the 10.4-inch v110 model) and $1,300 (for the 15-inch v1500 model). Microsoft says Smart Display will be available Jan. 8.

Here's the issue — the Smart Displays might be able to give you this freedom, but you can do the same things with a notebook connected to a wireless network for about the same price. For one-desktop homes, a Smart Display might be a better option. More information on the Smart Displays can be found at www.microsoft.com/windowsxp/smartdisplay.

ViewSonic's airPanel acts like a wireless monitor.

The BlackBerry 6510 combines the walkie-talkie with wireless e-mail.

Hewlett-Packard's iPaq h5450: The newest Pocket PC entrant from HP combines several connectivity features and packs them into a powerful device. The h5450 includes integrated 802.11b technology and integrated Bluetooth to let users decide how to connect their devices to the network. It also includes an integrated biometrics fingerprint scanner to let users secure access to the device.

It is the first iPaq to include a removable rechargeable battery, which users have requested. Other features include 64M bytes of RAM, 20M bytes of storage (flash storage), a Secure Digital I/O (SDIO) expansion slot, and a TFT display. The h5450 runs on a 400-MHz Intel xScale processor and will cost $700. The device should be available now; go to www.hp.com for more details.

Veo Photo Traveler: Finally, the most practical and inexpensive accessory for the new Palm Tungsten T PDA was Veo's Photo Traveler. The device snaps into the Palm's SDIO slot and acts as a camera for the device. It automatically installs drivers into the device after you snap it in, and takes 24-bit color photos at 640-by-480 (VGA) pixel resolution. The device costs $100.

For field service workers (or even insurance or real-estate workers) who need quick photos at a low resolution , this device can be an inexpensive alternative to a digital camera. Go to www.veo.com/Traveler_Palm/default.asp for more details.

If you want to see some of these and other products that wowed me at Comdex, go to www.nwfusion.com, DocFinder: 3335, for video highlights of the show.

Shaw can be reached at kshaw@nww.com.

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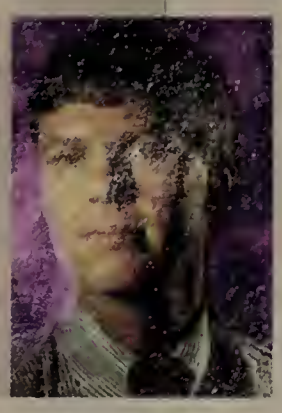


EDITORIAL

Bob Brown

Are you an early adopter?

Finding leading-edge network shops isn't as easy as it used to be — and it's not because they don't exist.

Partly to blame is the demise of national user organizations that gave network executives a high-profile way to showcase their efforts. Increasingly paranoid corporate policies about discussing IT projects in public or with the press also are a factor.

But perhaps the biggest issue is that so many companies don't want to be seen as being risk takers in a time of extreme fiscal conservativeness. After all, survey after survey shows that IT budgets continue to be tight. And we all learned a few lessons about going overboard during the Internet boom.

Still, the fact remains that new network technologies, from IP telephony to high-speed wireless LANs, continue to roll out and advance at a rapid rate. Industry leaders such as Cisco still are pumping billions of dollars into research and development ($3.3 billion, or 17% of revenue, in its most recent fiscal year) and though venture funding of network start-ups is way down, the companies still got $2.3 billion in the last quarter.

Some corporate IT shops are hunkering down, playing it safe and making the most of what they have.

Others are playing it safe, but also playing it smart by putting select new technologies to work for the purpose of saving money, making operations more efficient or gaining a competitive edge. These companies figure this is the perfect time to gain an IT-enabled edge over competitors that are waiting for a full economic recovery. Forrester Research calls such companies "stealth aggressors."

It's these forward-looking companies that we've chosen to highlight in our special Early Adopters package of stories, which starts on page 52.

Gene Zimon, CIO and a senior vice president at Nstar, says that the Massachusetts utility is moving ahead with key technology projects despite a constrained budget. The company is heading down the Web services path in an effort to tap more applications than it ever could if it tried to build them all itself.

Universities such as DePaul and Miami (of Florida) are putting Session Initiation Protocol-based IP telephony and coarse wavelength division multiplexing, respectively, to work. Tenet Health Systems is out in front in securing its 802.11b wireless LANs.

If you're looking for reassurance regarding your latest projects or inspiration to get new projects off the ground, see what network executives at these organizations have to say. And feel free to drop me a line about what you have on tap.

— Bob Brown
Executive editor, News
bbrown@nww.com

opinions!

Linux is the answer

Regarding "What users want from Microsoft" (www.nwfusion.com, DocFinder: 3322): I perceive Microsoft to work more or less like our politicians do. You tell them what you want; they listen, nod their heads and then do what they were going to do anyway. You can either play by their rules or take your game elsewhere. Elsewhere? Yes, to Linux. Here are my Linux answers to some of users' top Microsoft issues:

- Patch management: Doesn't need it — no patches.
- Security: Bulletproof. The worst a user can do is blow away his own private little space, not the whole host, and even that is hard to do. Also, no viruses.
- Licensing: Doesn't exist.
- Support: You might need a guru to get started initially, but once you get everything up and running, you won't need much. Paying someone big bucks for an initial setup will more than compensate for the nightmares you'll never have.
- Management tools: Plenty, and they're free.

I can do just about everything from my Linux box that a Microsoft user does. I have not upgraded or patched this box in the four years I've been using it. Sure, Office and Outlook are more powerful, but do you really need all the bells and whistles? Netscape e-mail does just fine, doesn't change mail formats between releases and doesn't burst into flames or hang. Neither does Linux.

Take one of the techie kids in the office, tell him to get one of the 386s out of the storage closet, get the CDs and do a "Linux load everything." Give him a week to tune it, and you'll be pleasantly surprised when he demos it.

Tony Podrasky
San Diego

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

Defining broadband

When was the term "broadband" redefined to mean speed? In the story "What is broadband?" (DocFinder: 3323), I saw many different definitions. The only definition I didn't see is the correct one.

The true definition of broadband is: A transmission medium that can carry signals from multiple independent network carriers on a single coaxial or fiber-optic cable, by establishing different bandwidth channels. Notice that there is no mention of speed in the definition.

Scott Burch
Chief scientist
Bulldog Information Services
New York

Blogs and business

Regarding your Face-off "Are Weblogs legitimate business tools?" (DocFinder: 3324): Mark Hurst contends that e-mail is more effective than blogs. This leaves out the blog's most important feature: The blog becomes a true knowledge-management system. It's a searchable, sortable archive of all the news and information that's relevant to users.

Hurst also says that Usenet is a better method for "building a community" — and he's right to some degree. It is, if you're trying to build a permanent community on a certain topic. However, if you are simply trying to create action items around a specific piece of news or want to make a quick comment about something, blogs make a lot of sense. A user can skim all the major stories in the blog and then decide which areas he wants to delve into. With Usenet, the user is required to judge entirely by subject lines with no additional context.

Mike Masnick
President
Techdirt Corporate Intelligence
Foster City, Calif.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 3321**

INTRANET ADVISER

Daniel Blum

Authentication gets smart

Single sign-on might be a nice dream; graded, context-sensitive authentication should be the reality.

In an apprehensive society, we'll be more identified and authenticated than ever before. We'll be carded, asked for our personal identification number and inspected using a bevy of new technologies. But whether these efforts prove effective in creating real security depends on how companies implement their identity management basics.

Strong authentication means adding more authentication factors. To the trusty password or PIN, add a smart card, token generator or biometric device. Consider an expanding array of newer options. Multiple vendors now can use cell phones as authentication tokens, sending instant messages with a one-time number to the phone. Other products generate unique signatures from your PC or other hardware. One biometric system requires users to call a toll-free number, which verifies their voice and issues a logon PIN. SchlumbergerSema sells a smart card/fingerprint reader. RSA Security's Smart Badging offers a smart card that also functions as building badge, SecurID token generator and stores personal passwords for multiple Web sites.

But there are conflicts between security and convenience that make strong authentication challenging. Smart cards still require the right PC driver to be installed. Users dislike carrying around a plethora of cards and other authentication devices. How do you authenticate employees who've forgotten to bring their cards to work? Cell phones are equally forgettable and must have wireless network coverage to operate.

Biometrics promise the ultimate convenience. But what if you're disabled, have laryngitis and can't produce the desired voice print, or are too paranoid to trust Big Brother with your most personal data? Biometrics has unleashed many issues.

Some say the smart card as national ID card holds the answer. Throw out the fat wallet — you just need one card. In time, our state-issued driver's license could be made into smart cards. But who is to say fake cards won't be readily available on the black market?

Which brings us to authentication, which must get smarter. Systems that authenticate users must be sensitive to context: If Joe forgets his card, he still should be able to log on with a password, but shouldn't be allowed to access sensitive applications. Single sign-on might be a nice dream; graded, context-sensitive authentication should be the reality.

The basic identity management processes must get better. Make sure your systems for vetting the user's identity before issuing credentials are bulletproof. Invest in user training and password provisioning to ensure better password quality. When planning smart cards or other strong authentication approaches, tie them to your directory and Web access-management infrastructure.

Authentication technologies are getting stronger, but so are hackers. You can't afford to sit this game out. Look to the basics and innovative technologies to make authentication stronger, smarter and better.

Blum is senior vice president and research director with Burton Group, a research, consulting and advisory service. He can be reached at dblum@burtongroup.com.

TELECOM CATALYST

Daniel Briere and Russ McGuire

Will 2003 see a telecom revival?

While we hate to play Grinch, we believe 2003 largely is going to be a repeat of 2002.

Columns written this time of year often have one of three themes: a nostalgic look back — such as the 10 best things to happen in 2002 (unfortunately, the "best" events this year would be "worst" in a good year); wishful Santa-list dreaming — you know, the 10 services we'd like to see launched (realistically, we're not even likely to get one of them in 2003); or a hopeful look forward.

We're going to focus on the New Year's resolutions that might turn the industry around and provide meaningful recovery. But while we hate to play Grinch, we believe 2003 largely is going to be a repeat of 2002 — and potentially a bit worse. Here's why:

- Many start-ups will fail in 2003. We've said before that more than 95% of the telecom firms started in 1999 and 2000 will either shut down or be sold for less than the initial investments, and we still expect that to happen. Furthermore, many survivors will target the same small set of customers. If you add up everyone's projected market shares within these segments, it totals 10,000% — and the last time we checked, only 100% of market share is available.
- Consolidation hasn't happened yet. We hope it will in 2003, but it won't be pretty. There still are too many competitors in virtually every segment of the industry, be it wireless, broadband, long haul or whatever. The trend is for these companies to successfully go through bankruptcy, leaving the competitive environment in its irrational and unsustainable state. The few mergers and acquisitions we've seen this year are tiny bets by big players at "fire sale" prices that seem to have almost no effect on the unhealthy market dynamics.
- A number of forces will make 2003 a very painful year for the regional Bell operating companies. The Bells have intensified their regulatory whining, especially over unbundled network element-platform pricing, and seem genuinely scared of WorldCom emerging from bankruptcy. But the real pain might come from more subtle areas. Wireless churn seems to be intensifying and is costly, and substitute data services are going to put tremendous price pressure on core RBOC data offerings. The emergence of freely accessible (or low-cost) Wi-Fi services will stress the high-cost 3G data rate model, and new technologies, such as the extended-reach Vivato antenna, can extend previously enterprise-oriented and short-range technologies from "hot spot" coverage to full metropolitan-area coverage — what we call "metrospots."
- The telecom industry has surrendered the high-value, networked-entertainment opportunities to the traditional media and consumer industries. The movement of the PC domain into the entertainment center — which will be a major movement of 2003 — is going to cut into the potential revenue-generating services of the telephone companies by eliminating the middleman. Services such as MovieLink go straight to the customer — and the TV set — over a broadband connection. Competition will force bandwidth pricing toward cost, and without a middleman, the five major movie studios certainly have the low-cost position. After all, they don't need to maintain a network.

Of course, the year won't be all bad news. We see data traffic continuing to grow — although pricing will continue to be under pressure. Budgets will be allocated to meet new strategic imperatives — although mostly by taking away from other budget areas to keep Wall Street happy (witness Verizon and its comments on capital spending for its national enterprise data backbone). Home networking to the entertainment center will become more mainstream — although outsiders such as Microsoft and consumer electronics players might capture much of the value. And RBOCs and other major carriers will have an incentive to provide some stability for their most important vendors — although they also will benefit by fostering new competition from Asian vendors.

And there will likely be a few true bright spots: Wireless metrospot products, enterprise security, voice over IP, XML processing equipment and any operational support system that will yield immediate cost-savings will likely enjoy true market success.

Not what we wanted for Christmas, but at least it's not a lump of coal.

Briere is CEO and McGuire is chief strategy officer of TeleChoice, a market strategy consultancy for the telecom industry. They can be reached at telecomcatalyst@telechoice.com.

EARLY ADOPTERS

MICHAEL MILLER

Q&A Your take

Network executives share their wisdom

Gene Zimon, CIO and a senior vice president at energy company Nstar in Boston, has an atypical perspective on network technology. While he currently oversees a statewide network for the utility, which serves 1.3 million residential and business customers across Massachusetts, he also has spent time on the vendor side, most recently at Oracle. This is an edited transcript of Zimon's talk with *Network World* News Editor Bob Brown about Nstar's key IT initiatives, including a move into Web services.

What do you see as the pros and cons of being an early technology adopter?

Considering that Nstar is an energy distribution company focusing on improving customer service and operational excellence, I don't feel that being an early adopter of networking technology is appropriate. However, if a new technology will provide us a significant opportunity to achieve improvements in customer service and/or reduce our operational costs at reasonable cost and manageable risk, I would definitely consider piloting and adopting it. I have done this in the past with wireless technologies and am considering several emerging technologies [now].

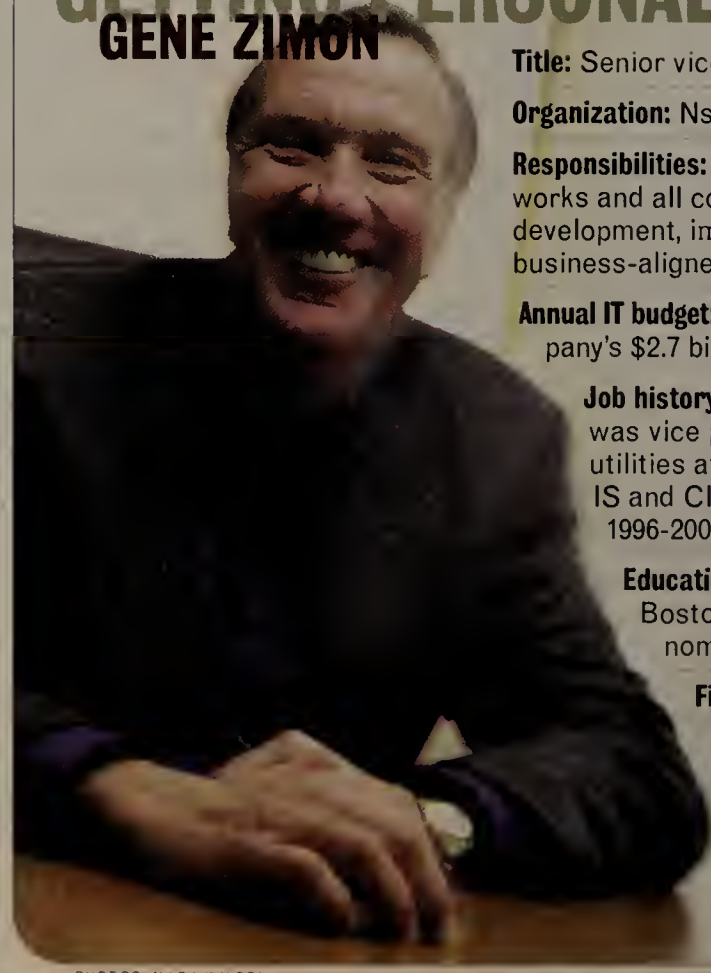
What are your main challenges?

The key things are driving improvements in data quality and leveraging our systems so we can get information to our internal customers that's needed to manage and measure our business and improve our workforce's productivity. Our focus now is primarily on improving the outage management process from the time a customer calls to the time we actually restore service and issue a follow-up work order to correct the system.

Our role from the network standpoint is to keep the outage management system up 100% of the time. We're decentralizing our dispatch system by setting up new

GETTING PERSONAL

GENE ZIMON



PHOTOS MARK WILSON

Title: Senior vice president and CIO

Organization: Nstar

Responsibilities: Operation of the data and voice networks and all computer and telecom services, and development, implementation and maintenance of a business-aligned IT strategy and architecture.

Annual IT budget: $50 million (about 1.8% of the company's $2.7 billion in revenue over the past 12 months).

Job history: Joined Nstar last year. Previously was vice president of business development for utilities at Oracle in 2000-2001; vice president of IS and CIO for Boston Gas (now KeySpan) in 1996-2000; director of IS at Wang in 1983-1996.

Education: Master's degree in education from Boston University; bachelor's degree in economics from Tufts University.

First computer: Texas Instruments PC

Last good management book read: *The Age of Unreason* by Charles Handy

Read a longer version of this interview at www.nwfusion.com, DocFinder: 3330

service centers. From a network perspective, we're basically just building redundant links to those centers. But the other thing we're concerned about is how the power restoration process would be affected if the network or a service center went down. We're planning to build redundant data centers. The first step there is building high availability into the servers, and we're looking at building a geographically dispersed storage-area network.

So your efforts are largely about speeding business processes?

Right. One key project we expect to roll out in the spring will make it easier for customer service reps to answer questions. We'll provide the [representatives] with a portal to all back-end systems they need for that job, from billing to services. That is all done through WebMethods messaging and Oracle CRM on the front end.

Then you're getting into Web services?

I guess you could say we are. We're starting small, not attacking it as a special project but really as part of a project to solve a business problem. We're moving to setting up internal services for validating information and providing reference services. One problem we have is a disparate set of systems that our people use for things such as addresses of customer premises. We're trying to establish a message-based premises reference [system] such that you enter a request about a premises in one system and it goes out across the network to validate a street address, ZIP code, and the X and Y geographical coordinates. We also might do this when looking up equipment we use. The hardest part in all this is getting agreement on what the problem is. Then we need to build a data model from which we can build the reference services that self-populate as much as possible.

Why Web services rather than more traditional application-development methods?

While we're starting internally, the real potential benefits will come when we're able to take advantage of external providers of certain types of databases and/or services. There's no reason we need to create all these types of databases internally. Right now some these limited services are free, too, although we'd need to validate them. To create an extended enterprise that can take advantage of these services we need to componentize our application architecture, so all the parts can just plug and play.

One example of where we might want to take advantage of this is when a utility pole goes down or is damaged and you see double poles go up. That damaged pole can't be removed without the cable, telephone and electric utilities taking action in a prescribed order. Web services could be used to determine the status of these actions, the order of which varies based on who owns the pole. In fact, all the major utilities in Massachusetts got together and selected a vendor to provide what is really an application service provider; however, this functionality could be restructured as a Web service that could work with our back-end systems.

Web services have been hyped to death over the past year. Do you think they'll live up to the hype and if so, how soon?

Web services are extremely appealing from an architectural and cost containment perspective, and therefore Nstar is closely monitoring product development strategies of application and other technology vendors. Currently, it is more hype than real in that we have not seen true usable Web service delivery components from the major application vendors beyond some [programs for validating customer locations].

My view of a Web service is the ability to initiate a request from your internal portal and have that request validated and returned by an external or internal Web service. To achieve this there are issues related to the availability of portals, data latency, security, validity of source and cost, which need to be defined. None of the enterprise portals currently on the market are architected to take advantage of the emerging Web services standards, particularly the emerging interoperability and security standards. Such portals are not expected to come on to the market until late 2003.

What ramifications do you expect running Web services to have on your network and computing infrastructure?

We presently deploy most enterprise applications through a distributed client/server model. Few are deployed on the desktop. As we upgrade these applications, we will be moving to a thin-client model. Thus, we already have a fairly high-traffic network. I'd say that the greatest ramification of running Web services, and particularly depending on the distributed Web services delivery model, is going to be the administration. For example, how will enterprises deal with Web service components hosted outside the enterprise that are subject to change? How can you guarantee availability of key business functionality or continuity of service when such functionality is coming from outside the enterprise? How do you ensure that two Web services components, both of which are hosted outside the enterprise by different entities, remain in synch?

It will be our intent to pilot some minor Web service applications internally to better understand the internal network traffic. Examples could be our employee telephone directory, our conference scheduling capability and, as I mentioned before, evolving some of our reference data services.

Are you giving Microsoft's .Net architecture a look?

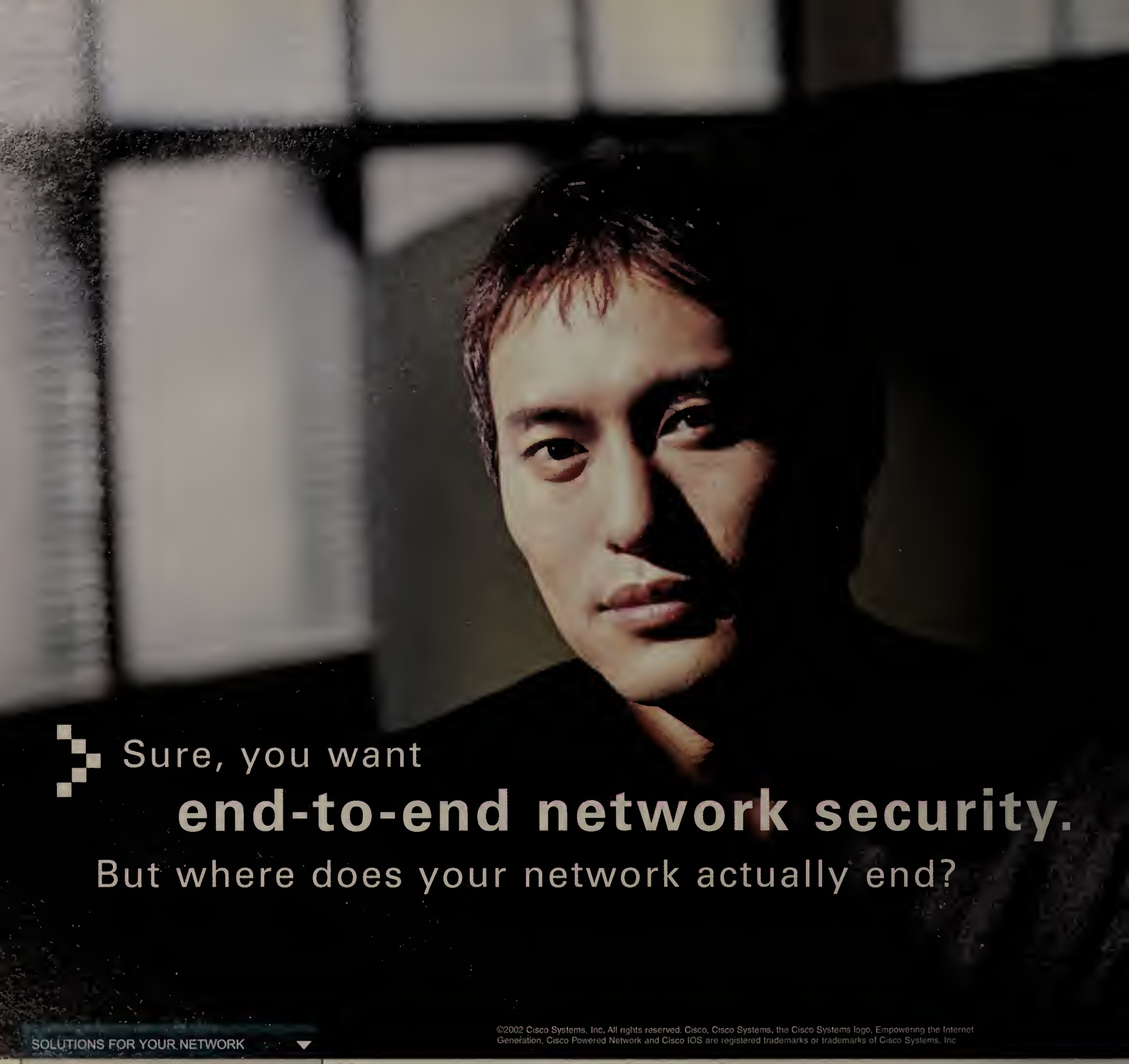
We are presently watching both .Net and J2EE. [Java 2 Platform Enterprise Edition]. This is the key technical decision that we will need to make within the next six months. It impacts multiple dimensions and layers on our technical architecture, and we will need to understand the benefits, limitations and risks of the various options. Analysts seem to be favoring J2EE as the standard to adopt.

What does your network look like?

We have a totally redundant Gigabit Ethernet fiber ring around the Boston area that connects our major sites, and Ethernet, frame relay, T-1s or T-3s to all our service centers. Our unregulated subsidiary, Nstar.com, installed the fiber. Verizon is our primary carrier, and we have UUNET for

See Zimon, page 63

"We are presently watching both .Net and J2EE. This is the key technical decision that we will need to make within the next six months."



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MAKING WIRELESS LAN SECURITY AIR TIGHT

BY ELLEN MESSMER AND JOHN COX

All-in-one security gateways are helping to boost confidence in wireless networks.

Losing sleep lately? With rogue wireless LAN access points popping up every time you turn around it's easy to understand why. Securing the ether is becoming job No. 1.

One approach that's gaining favor is to use security gateways to lasso groups of access points. These boxes are available from a handful of start-ups, including Bluesocket, Cranite Systems, Fortress Technologies, ReefEdge and Vernier Networks. As a single sentry, the wireless security gateway might provide a firewall and support for authentication and encryption. Some products, such as those from Bluesocket and ReefEdge, can manage wireless bandwidth by enforcing quality-of-service restrictions on bandwidth use or application types.

It's not only the all-in-one aspect of these security appliances that appeals to early adopters. Many organizations say the gateways complement existing security resources such as VPNs and directories used to authenticate users of Ethernet LANs and enterprise applications.

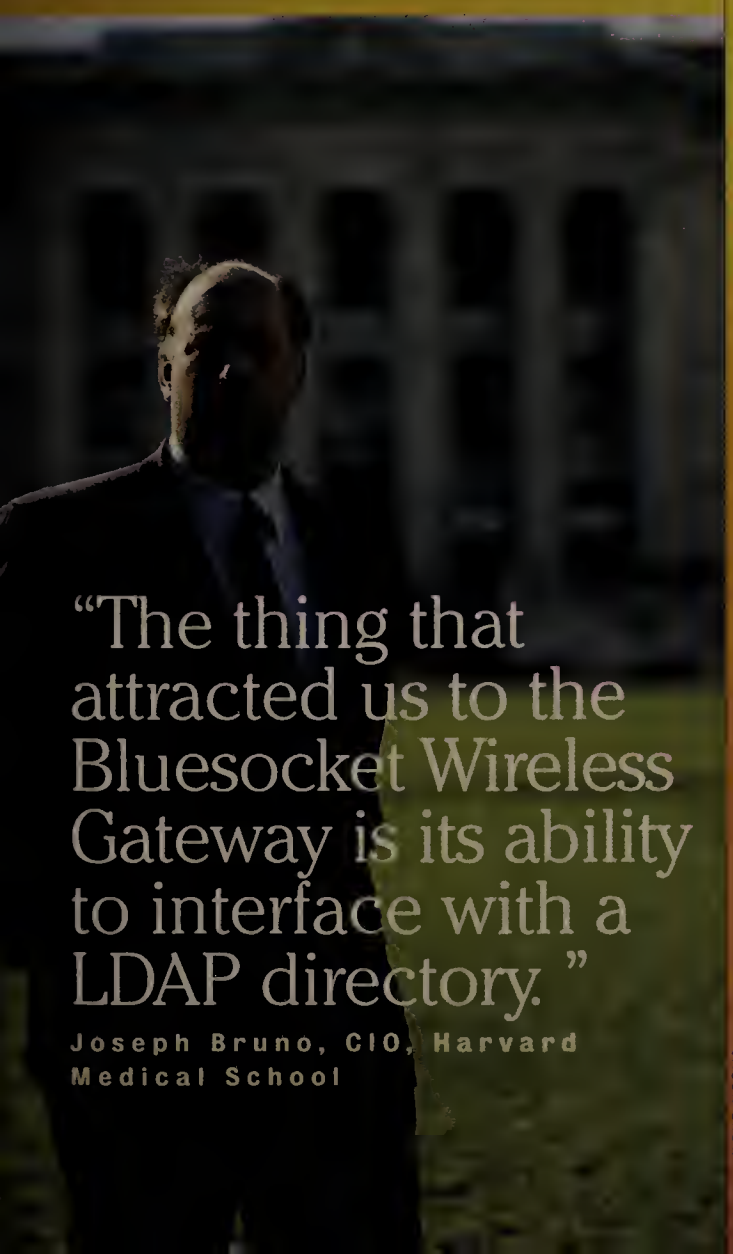
"The thing that attracted us to the Bluesocket Wireless Gateway is its ability to interface with a [Lightweight Directory Access Protocol] directory," says Joseph Bruno, CIO at Harvard Medical School, where students and professors have clamored for 802.11b wireless access across three floors of the school's education and library centers.

Harvard already had invested considerable resources in an LDAP directory and an Oracle database to regulate the network privileges of tens of thousands of users on the campus. "We didn't want to have to bring in another authentication engine for user names and passwords just for wireless," Bruno says.

During the past few months, Harvard Medical School in Cambridge, Mass., has installed dozens of Cisco Aironet wireless access points so staff and students with 802.11-enabled laptops can access the campus LAN after authenticating by means of password through Bluesocket's WG-1000 appliances.

The WG-1000s, which check user data against Harvard's central repository, are maintained in load-balancing mode for failover purposes. The gateways support a number of encryption modes, including IP Security (IPSec) implementations, Point-to-Point Tunneling Protocol and Secure Sockets Layer (SSL).

Harvard selected Cisco Aironet as the most "stable" among a number of vendor access points tested, Bruno says. "But the security features of the access points are not that good."



"The thing that attracted us to the Bluesocket Wireless Gateway is its ability to interface with a LDAP directory."

Joseph Bruno, CIO, Harvard Medical School

JASON GROW

The 802.11-standard encryption Aironet uses, Wired Equivalent Privacy (WEP), is viewed as weak and breakable. Moreover, Harvard didn't want to get locked into using Cisco's proprietary Lightweight Extensible Authentication Protocol (LEAP), which would have required use of Cisco's wireless LAN cards and authentication server. "LEAP doesn't leverage the things in our environment, like the LDAP directory," Bruno says.

Harvard Medical School looked at a few other security gateways before choosing Bluesocket. Costs for competing devices were roughly equal — a few thousand dollars per appliance, each of which could support about a dozen access points. But Harvard went with BlueSocket because it dovetailed with the school's existing security investments.

Although the Bluesocket gateway can restrict wireless bandwidth by user and application, Harvard Medical School's IT staff hopes to avoid using that feature. "We suggest people limit their use of the [wireless] LAN to e-mail and low-bandwidth applications," Bruno says. "To the best of my knowledge, we've never had to go to people and say, 'You're hogging all the bandwidth.'"

But the school can examine traffic by type and user, if needed, using reports generated by the Bluesocket gateways, which report to a central management console.

Rx for mixed LANs

Marrying wireless network authentication to an existing directory also figured into security planning at Tenet Health Systems, which operates 119 hospitals, 20 of which independently started to use a mix of 802.11b access points from Cisco, Lucent and Enterasys Networks.

Instead of trying to sort out whether different vendors' 802.1X authentication software worked the same way, the Santa Barbara, Calif., healthcare company opted for the ReefEdge gateway to deploy security controls across the diverse environment.

ReefEdge's Connect System product line consists of Edge Controllers that support as few as three to as many as 20 access points, depending on the model. A hundred or more controllers can be managed by another appliance, the Connect Server.

Tenet has established some base security requirements for wireless use at hospitals. At a minimum, each Tenet network user on any wireless LAN has to authenticate their identity via password and ID to gain access to the hospital applications available across a private T-1 network.

"We need to have these wireless LANs work with our [Microsoft] Active Directory where we've stored information on over 113,000 users," says Jeff Lett, the corporation's senior director for technical strategy and operations.

While the ReefEdge product supports Active Directory, it wasn't as easy as Lett originally had hoped. A Remote Authentication Dial-In User Service server is required to link to the central Active Directory.

In Tenet's decentralized environment, hospitals make their own choices when it comes to using VPNs for security, Lett says. "We already had about 3,000 or so VPN users."

A ReefEdge client component called the "Mobile Domain Utility" is an optional piece of software that Tenet hospitals can use to enforce use of IPSec clients for encryption. It works with Nortel's Contivity Extranet Client, Cisco's VPN Client and NetScreen's remote client.

The ReefEdge Connect System can provide bandwidth quality of service and authenticated roaming across wireless LAN subnets. And those management features will take on growing importance for Tenet because some hospitals are beginning to use their wireless networks to support IP-based phones from SpectraLink.

Remote support

Some organizations that are installing security gateways to encrypt radio waves are discovering that far-flung facilities represent something of a challenge.

Cranite Systems' Wireless Wall gateway requires the use of client code to set up an encryption session from laptop to the gateway appliance. Cranite uses the Advanced Encryption Algorithm, the new federal standard for encryption intended to replace the aging Digital Encryption Standard. The encryption is performed at Layer 2, so all the network information, such as addresses, is encrypted in each packet with the data.

CancerCare Manitoba, which runs cancer treatment facilities throughout the Canadian province, deployed the Wireless Wall at its three main sites in the capital, Winnipeg.

The Winnipeg sites are outfitted with 3Com access points that are grouped in a virtual LAN and linked to a Cranite gateway. Users log on to the Wireless Wall using a Cranite client, says Mark Kuchniki, the organization's director of information services.

With the gateway, IT can regulate access to parts of the network. For instance, a pediatric care staffer from a partner hospital might be limited to accessing e-mail and the Internet when working at CancerCare's main site.

CancerCare is considering deploying the tools at 17 small offices in remote rural areas if it can figure out how to do so cost effectively, but most of the sites only have one access point and a couple of clients. "It's not cost-effective to add a $10,000-controller at each site," Kuchniki says. "And we can't create a virtual LAN over a wide-area network" because the gateway handles only one set of IP addresses.

Kuchniki is talking with Cranite about software changes that would let the Cranite client authenticate over a WAN to the gateway. That would let him secure the wireless links at rural clinics without having to deploy more controllers.

Shareware route

The University of Georgia in Athens started its search for wireless security options by looking at shareware.

Amy Lyn Edwards, a network engineer in the school's enterprise information technology services (EITS) division, helped organize a task force to find an approach that would work in the university's decentralized computer environment.

She says the task force was formed "to try to stay ahead of the wave" of 802.11b access points from Cisco, Enterasys and Apple that were spreading rapidly across its college campuses.

The task force started out by looking at shareware from NoCatNet, a group planning a wireless network in California.

The University of Georgia staff also took a hard look at software developed by Georgia Tech, called Local-Area Wireless/Walkup Network, for a wireless campus network that was developed more than a year ago using access points from 3Com and Lucent. While these shareware products might have been less expensive than commercial products, none of them quite fit the bill.

"What these [packages] didn't provide was a way to do roaming across subnets," Edwards says. "But you can learn a lot by testing things out with shareware."

In its final evaluation of Bluesocket, ReefEdge and Vernier products, the EITS division chose Bluesocket because it offered the best fit with existing technologies, including the school's Novell eDirectory on NDS, the central repository for the University of Georgia.

In addition to the departmental wireless LANs springing up, the university is building out an extended wireless network called Personal Access Wireless/Walkup Systems. The school's technical staff is requiring users to register to authenticate identity, which is accomplished through the Bluesocket gateways.

Evolving standards

Network managers often say they want to stick with one security gateway vendor to minimize management problems. But some security consultants say it's better to experiment to find out what works best.

"Locking yourself into one vendor's products isn't a sound idea," says Gary Morse, president of consultancy Razorpoint Security Technologies. He says some organizations might be able to get away with their existing firewall and VPN infrastructures, and skip gateways altogether.

But regardless of approach, all users swept up in the wireless revolution will have to keep an eye on what is happening in the standards bodies. There have been fits and false starts associated with security standards for wireless LANs in both the IEEE 802.11 and the Internet Engineering Task Force (IETF).

New versions of the much-maligned WEP and other improvements to the 802.1X wireless security framework by the IEEE's 802.11 standards committee are under way. And Cisco, Funk Software and Microsoft are battling to push through favored technologies within the IETF to improve wireless LAN security.

The wireless security alphabet soup includes Protected Extensible Authentication Protocol, backed by Microsoft, Cisco and RSA Security as a substitute to Cisco's LEAP. Funk and Certicom are advocating something similar called Tunneled Transport Layer Security to protect authentication information over radio waves.

So are organizations that are buying security gateways today simply looking at them as stop-gap measures until the wireless LAN access points come with IEEE and IETF standards-based security that's more easily understood and trusted?

Some say no, some say maybe.

"This is not a stop-gap measure," Tenet's Lett says. "I'm not seeing those other things coming along very quickly, and going with hardware is a good way to handle a variety of encryption schemes."

But at Simon Frasier University in British Columbia, which has installed the Vernier Networks system on its campus wireless LAN to provide secure password authentication via browser SSL encryption, the answer is "maybe" because the Vernier appliance doesn't encrypt the wireless traffic.

"A year from now we'll go and review this," says Worth Johnson, director of operations and technical support at the university, which has about 100 Enterasys wireless access points installed.

"The Vernier system cost me only about $10,000 to support 20,000 people, which is not a lot of money. 802.1X is vaporware right now. But over the next two years, we may be using 802.1X and IPSec VPNs tools that work together," Johnson adds. ■

JOSEPH BRUNO, HARVARD MEDICAL SCHOOL

Tip

Don't build a separate authentication engine just for wireless if you don't have to.

EARLY ADOPTERS' DOs AND DON'Ts

Do

- Install a gateway that fits technically with your existing authentication and encryption mechanisms, such as directories used as repositories and IPSec clients.
- Look at shareware, such as NoCat and Sputnik, and maybe save yourself a few bucks.

Don't

- Overlook the bandwidth-management features of these products.
- Lock yourself into one vendor's product because wireless LAN security gateways are relatively new, most of the companies providing them are start-ups, and the products are changing quickly.

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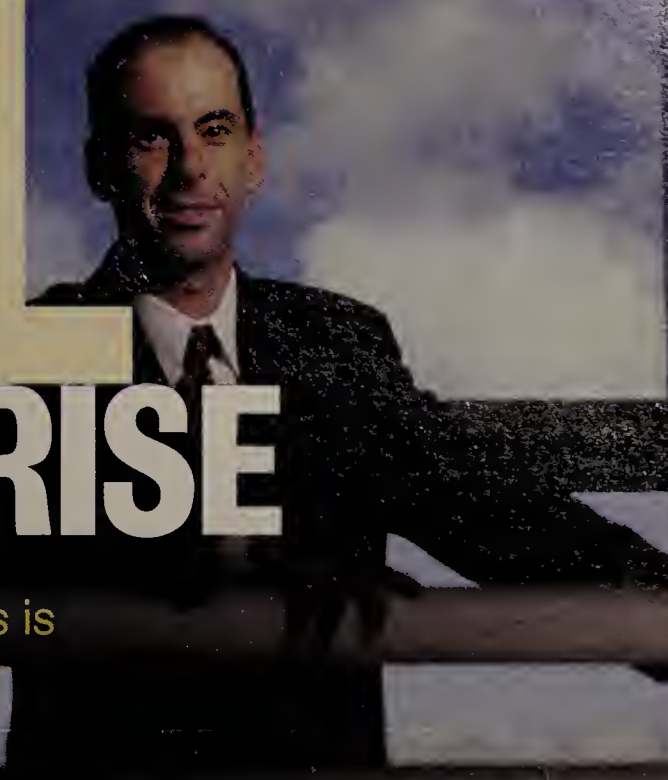
BY JIM DUFFY



Once the sole purview of carriers, beaming gigabits over glass is now taking root in corporate networks.

Optical switching and transport systems are finding their way into corporate networks as users deploy fiber to support high-speed connections and bandwidth-hungry applications between buildings in a metropolitan campus. Educational institutions and governmental bodies are leading the way; even a few utilities and financial institutions are seeing the light.

Chief motivators for employing light instead of electrons are simple physics and economics: moving more weight — in this case, applications — at faster speeds, leading to operational efficiencies that save and make money.

The state of Hawaii, for example, is deploying an optical Ethernet network to support increasing amounts of bursty data traffic and cap its investment in SONET.

Hawaii's Institutional Network (INET), which connects the state government, Department of Education and the University of Hawaii and its community colleges, has an optical Ethernet network augmenting an OC-12 SONET ring. INET is installing up to 30 Luxn WavSystem wavelength division multiplexers (WDM) to extend its data network.

The network is on the island of Oahu, and is being expanded to Maui and Hawaii.

INET required WDM for its flexibility and bandwidth capacity as it extends its network to outlying areas. SONET proved unwieldy for handling increasing loads of data traffic from Ethernet and Gigabit Ethernet switches at the INET's three users.

"We looked at upgrading SONET and basically felt that it was not cost-effective, and it wasn't going to take us far enough into the future," says David Lassner, technology director at the University of Hawaii. "We could have done a moderate increase in capacity but then we would have been pushing the envelope on SONET speeds."

Lassner says the alternative to the INET WDM network would have been OC-48 SONET, which would have cost at least five times what Hawaii spent on INET.

The INET backbone consists of two physical rings. The rings are tied together at the Hawaii Community College campus using a Fujitsu SONET switch and a Cisco Layer 3 switch.

INET considered upgrading this network to OC-48 SONET to handle increasing traffic loads, but that would have involved replacing the SONET add-drop multiplexers at each site. Also, the three users of the SONET ring had different bandwidth requirements. Independently allocating, regulating and expanding the network capacity would be difficult in the shared SONET ring because all three users would have to agree on any change.

"It's a shared network, and we have different policies on how we deploy TCP/IP," Lassner says. "Doing a shared TCP/IP probably wasn't going to work, in addition to not giving us enough bandwidth. Our routing issues would have been just too complex."

Each user also had different voice and data requirements ranging from T-1 to 10/100M bit/sec and Gigabit Ethernet. While T-1 service is easily mapped into SONET, the various data services would require SONET framing and the inherent overhead and bandwidth inefficiencies.

INET decided to keep the existing OC-12 SONET network in place carrying traffic using the 1,310-nm wavelength. Ethernet would be multiplexed natively onto the ring at various International Telecommunications Union (ITU) 1,500-nm wavelengths, essentially creating multiple virtual networks over one pair of fiber.

At the backbone location, the individual ITU wavelengths are multip

STEWART SERUYA,
CHIEF SECURITY AND NETWORK OFFICER, UNIVERSITY OF MIAMI

Tip:

If you're building an optical network to carry mission-critical traffic like voice, make sure you build in carrier-grade reliability.

EARLY ADOPTERS' DOs AND DON'Ts

Do

- **Look at coarse WDM as a less-expensive alternative when implementing an optical network.**
- **Consider moving to optical if you're implementing new high-bandwidth applications.**

Don't

- **Toss out an old SONET network. WDM can be mapped to SONET.**

plexed together and this signal and the 1,300-nm wavelength from the collocated SONET switch are combined into one fiber output.

"We actually took our legacy SONET network, put it on its own wavelength, and then we opened up all of the ITU/WDM frequencies for new use without having to dismantle our SONET network," Lassner says. "So we have our legacy SONET in place but we don't expand that at all. And on the new connections we've pretty much focused on Ethernet technologies."

INET is keeping SONET around for now to limit the scope of its upgrade project and take advantage of SONET's 50msec path recovery. As a result, optical Ethernet will "underlay" INET's SONET infrastructure, Lassner says.

Making the grade in Miami

The University of Miami is seeking to provide faster, more cost-effective information sharing and collaboration on academic research on subjects ranging from diabetes to ice floes. So the largest private research university in the southeastern U.S. has deployed a metropolitan optical network across three of its South Florida campuses.

The university opted for a coarse WDM (CWDM) network built with four ONI Systems' ONI 2500 transport systems. CWDM differs from WDM in that wavelengths are spaced farther apart, which requires less cooling of the laser. CWDM is therefore less expensive, which means more organizations can afford to implement optical network technology.

The University of Miami deployed an OC-48 CWDM network packed with multiple gigabit links and Fibre Channel storage protocols. One optical ring has a Nortel OPTera 3500 OC-48 SONET add/drop multiplexer that adds and subtracts T-1 lines and Ethernets between the school's many sites.

"We had an environment of multiple T-1s and a BellSouth 'Smartring' SONET OC-3 service," says Stewart Seruya, the university's chief security and network officer. "Then we purchased a long-term lease for dark fiber. We wanted to replace the single service on fiber to multiservice on the same dark fiber, which brought us to the CWDM/[dense] WDM project."

As an alternative to the CWDM network, the university would have had to purchase multiple OC-48 links between its various sites, which was considered to be cost-prohibitive.

"Ultimately, we did the CWDM-with-SONET project for a one-and-a-half year payback, compared to the original costs of the multiple links and services we were purchasing," Seruya says. "At the same time, we expanded our capacity exponentially."

Seruya's biggest network concern is that familiar shadow: reliability.

"Since voice, data, video, storage are all riding on one network/fiber ring, this network had to be built to be up 99.999% of the time," he says.

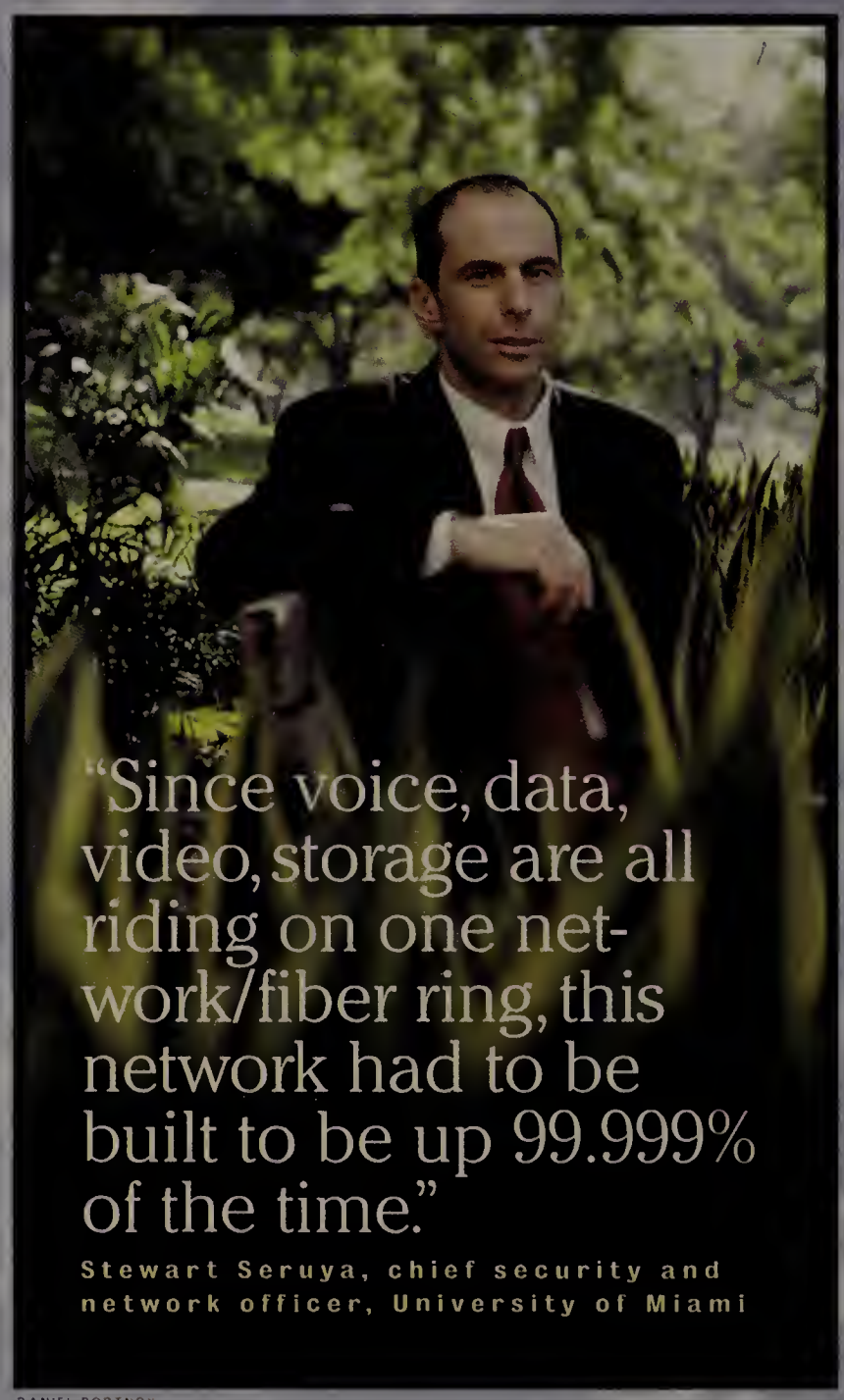
Not to mention the 14 schools and colleges, 13,500 students, 8,500 employees and 2,050 full-time faculty members it has to interconnect. But as the second largest private employer in Miami-Dade County and one of the top 50 private U.S. schools in federal research funds received, the University of Miami must be pretty confident CWDM will come through.

Texas school takes different route

But another school is sticking with its SONET ring to share voice, data and video across six campuses between five and 50 miles apart. The El Paso Community College (EPCC) in Texas says the OC-48 redundant SONET ring will support more efficient online student registration and faster access to all administrative applications, including payroll, for employees.

In early 2002, the college purchased Cisco's ONS 15454 as the linchpin of the Fast Ethernet-over-SONET network, dubbed Orion. The network is provisioning 100M bit/sec full duplex circuits to each of the school's campuses and connecting each campus to the main central site.

Its hundredfold increase in speed also lets EPCC support one critical application in particular: campus-wide crime prevention and security. EPCC networked video cameras throughout the main campus and equipped its "Mission Impossible" campus — which houses its Law Enforcement Center — with videostreaming technology to train its criminal justice students.



DANIEL PORTNOY

Because EPCC is only running Ethernet over SONET, it does not need the multiservice capabilities of WDM or CWDM. The school eventually plans to upgrade to OC-192 and drop a gigabit pipe to each campus to support even more bandwidth-stressing applications.

"We're looking at providing some dual credit-type applications," says Fabiola Rubio, vice president of resource management at EPCC. "If you are a student at a high school, you can take college courses for credit."

EPCC has higher goals for Orion, however. The school is looking to spearhead an effort to partner with local community organizations to share the network and the costs associated with its future development.

If the program moves forward, many local organizations will be connected to the same network: the city of El Paso; the University of Texas at El Paso; the El Paso City Libraries; El Paso County; Texas Tech Health Sciences Center; the El Paso Independent School Districts, which includes 96 schools; and Region 19 Education Service Center, which manages educational delivery services for the community.

Not bad for a network that began as two strands of fiber-optic cable that Time Warner, then known as Paragon Cable, donated to the El Paso community in the mid-1990s. EPCC offered then to manage the network to support educational initiatives, and continues to do so.

Another community-centric optical network is being operated by the city of Charlottesville, Va. The city implemented its OC-12 Ethernet-over-SONET network two years ago to provide high-speed interconnections between libraries, schools, City Hall, recreation centers, fire and police departments and just about any other public building, says Rick Fore, director of IT for the city.

The city also wants to support CRM and enterprise resource planning applications, and integrate them with packetized voice to improve customer relations, Fore says.

"We're now looking at voice over IP as a solution to save money to increase functionality to improve customer service," Fore says. "We knew that we would need good connectivity to support that and to be able to leverage what I think will be the integration between phone systems and those types of applications so that we can provide better customer service."

Provides order in the court

The city also is videoconferencing court arraignments over the network. That way suspects need not be transported between jail and courtroom to be arraigned, but can attend virtually through a high-speed video link-up between the courthouse and the jail over the optical network.

The network also supports a high-bandwidth connection between the regional lockup and the University of Virginia medical center so inmates can receive a medical or psychiatric evaluation without leaving their cell, Fore says.

The city's network is a SONET ring with four major nodes — Nortel OPTera Metro 3400 systems — connecting City Hall, the fire department headquarters, the emergency communications center and the city parks department headquarters. What made the network financially attractive for the city was not a quick return on investment, but ownership of the utility pole rights of way where the network's fiber is strung.

"We swapped rights of way for dark fiber," Fore says. "So we were able to get our dark fiber around the city for next to nothing."

The city has a 99-year lease for the fiber at the cost of $1, Fore says.

The network is scalable to OC-48. With that kind of scalability, plus the resiliency of SONET, Fore says his 2-year-old network could last 10 to 12 more years.

"It gives us the scalability that as bandwidth requirements grow, we can grow with it without having to throw everything out and start over," he says. "The fact that I know it's scalable and that I know it will meet our demands for the next 10 years in itself provides some sort of return on my investment." ■

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SIP PASSES TASTE TESTS

BY PHIL HOCHMUTH

The Session Initiation Protocol is winning converts among the voice-over-IP crowd.

JOHN KRISTOFF, RESEARCH AND DESIGN MANAGER, NETWORKS AND TELECOM GROUP, DEPAUL UNIVERSITY

Tip: Set up a separate test lab network to put SIP gear through the paces before deploying.

EARLY ADOPTERS' DOs AND DON'Ts

Do

- **Find areas on the network where SIP and VoIP can be integrated unobtrusively. Look to more tech-savvy end user groups for pilot deployments.**
- **Look for a long-term migration from traditional voice to VoIP and SIP.**

Don't

- **Get roped into versions of SIP. Be wary of VoIP technology "based on" SIP, but not on the actual IETF standard. Such products may have interoperability problems with other SIP-based gear.**
- **Be closed-minded about letting a SIP-based network interoperate with other protocols such as H.323 or Media Gateway Control Protocol.**
- **Forget to include a strong service-level agreement with any service providers that will pay you back in a service outage.**

The Session Initiation Protocol has gained industry momentum for its promise as the future of real-time voice, video and messaging applications. But early adopters like it for one reason — it's very simple to manage.

SIP is an IETF standard for establishing and terminating real-time application sessions over the Internet. SIP's creators built it similar to HTTP, the standard for transmitting Web page information. SIP is text-based, meaning that commands are coded in a format that makes it easy for application developers to write programs that use it.

The protocol operates at Layer 7 of the Open Systems Interconnection model stack, in conjunction with TCP/IP and Real-Time Protocol (RTP), which are Layer 3 and Layer 4 protocols. TCP/IP and RTP transmit packetized voice and video in sessions established with SIP.

"We're interested in SIP as the key component to a base voice-over-IP architecture," says John Kristoff, research and design manager for the networks and telecom group at DePaul University in Chicago. The school recently installed a test SIP deployment with 15 SIP phones from Pingtel, along with Pingtel's Linux-based SIPxchange IP PBX.

"VoIP and SIP are really separate, and one does not necessarily rely on the other," Kristoff says. "However, SIP is the preferable core architecture for implementing VoIP."

Kristoff says the simplicity of the protocol, along the lines of TCP/IP, allows it to be deployed on networks without requiring lots of technical rejiggering of network equipment or protocols. Basically, if a network can support Web traffic, it can run SIP.

VoIP vendors such as Siemens, Nortel, Alcatel and Cisco have made plans to come out with SIP-based VoIP servers by year-end or next year. For smaller deployments, Mitel and Pingtel offer SIP-based phones and IP PBX products.

Last year, SIP got a shot in the arm when Microsoft threw its weight behind the protocol by including it as the base call set-up technology for its Windows Messenger application in Windows XP. The successor to Microsoft's H.323-based NetMeeting, Windows Messenger integrates voice, video, instant messaging and "presence management," an instant-messaging feature that notifies users who on their buddy lists is available.

Sometimes, the best technologies are the ones you don't even notice are there. This is the case at Computer Korner, a PC retailer in Ottawa. The business has two stores in the city, and recently installed Mitel's SIP-based 3050 IP PBX and 5505 IP SIP phones to support the locations.

"What we had previously wasn't a system; it was just some Bell [Canada] lines. We were looking for a system for a way to better utilize those lines," says Dave Hill, Computer Korner owner, who worked with Mitel engineers to install the box.

The 3050 is an all-in-one small-office PBX, and also includes a firewall, file-and-print server and router. The telephony part of the device is based on SIP, which lets boxes deployed across a wide area find each other easily and interconnect with minimal configuration.

Hill uses his company's broadband cable modem Internet service to connect the two Mitel 3050s in each office. The 3050s sit behind the cable modem and let employees on 5055 SIP phones, which plug into the Ethernet LAN running in each store, call across town to each other over the Internet with a four-digit dialing plan.

The simplicity of the configuration was key, Hill says. The 3050s have Dynamic Host Configuration Protocol and Web servers running on them, so all the software for Internet connectivity is up and running when the IP PBXs were brought online. The SIP technology on the phones and the IP PBX from Mitel let Computer Korner staff make calls back and forth over the Internet as easily as if they were sending e-mail or instant messages, he adds.

This kind of simple connectivity the Mitel 3050 devices provide via SIP is an example of why SIP was created in the first place, says one industry expert.

"The Internet works the same way in China as it does in Scotland and the U.S. because of standards such as HTTP and IP20," says Henry Sinnreich, a distinguished member of engineering at WorldCom and a member of the IETF's SIP subcommittee. "SIP is a closet cousin of HTTP, so voice just appears as another Web application. This is really the key to making [VoIP] interoperable and easy to use."

Menlo College in Atherton, Calif., uses SIP in conjunction with its Cisco-based VoIP system installed on campus with Cisco IP phones deployed to all faculty, staff and student dorm rooms. Deployed throughout the campus are 500 Cisco 7960 IP phones that can be enabled with SIP and other protocols.

SIP coexists on Menlo's network along with the H.323 protocol and Cisco's Skinny Call Control Protocol, both of which run natively on Cisco CallManager IP PBXs. Menlo has installed an open source SIP server gateway, developed at Columbia University, which maps Cisco SIP phones to an H.323 address and allows SIP devices to register on the CallManager IP PBX.

The SIP phones from Cisco have greatly eased the telecom management burden of the school's IT staff.

"The management aspects of it are incredible," says Blair Simmons, director of IT at Menlo College. "All the configuration is in the device itself." When plugged into any Ethernet port, the phones automatically update the central server of the phone's new address and location.

For DePaul University's Kristoff, new applications such as using the IP phone as a thin client, or advanced unified messaging and video applications are the main reasons he thinks SIP will pay off.

"For many large environments, the advantage of VoIP will likely come from new applications or new uses of the technology rather than as an attempt to cut phone management costs by shear system replacement," he says.

UNDER CONTROL

BY TIM GREENE

Route control customers say they're experiencing unexpected benefits.

EARLY ADOPTERS' DOs AND DON'Ts

Do

- Share route control data with ISPs to help them deliver better services.
- Check that your routers have the horsepower to handle frequent BGP updates.

Don't

- Expect direct return on investment.
- Take ISPs' word about SLA compliance.

SCOTT ELLENTUCH, PRESIDENT, TTSG INTERNET SERVICES

Tip:

Use information gleaned from route control products or services to renegotiate better ISP contracts.

STEVEN VOLE

Route control products and services are primarily designed to pick the best paths for Internet traffic at companies that use more than one ISP. But early adopters of the technology say it delivers a range of additional benefits.

In deciding which way traffic should go, route controllers gather data that companies can also use to decide how much more bandwidth they might need to buy, to ensure that ISPs are living up to service-level agreements (SLA) and to negotiate new service provider contracts.

Route controllers are network appliances that sit behind firewalls in multihomed networks as peers to Border Gateway Protocol (BGP) routers. They probe to determine how well each available ISP connection is performing and pick the best one. Vendors of this type of equipment and service include netVmg, Proficient, Route Science Technologies and Sockeye.

Jonathan Davies, COO of hosting provider UPNetworks in San Francisco, says his Proficient equipment directs as much traffic as possible to his Williams Internet link rather than his others because it is one-third the cost. "We clearly want to use the cheap stuff whenever we can," he says, as long as performance is up to par.

BGP alone picks the route that involves the fewest router hops. But users want to factor in other parameters such as delay and which link costs the least. Route controllers do this and then update BGP route tables accordingly to determine which ISP traffic gets sent to. Later, if another ISP's performance becomes the best choice, the route controller changes the route tables again.

Widener University in Chester, Pa., uses RouteScience equipment primarily to keep performance up by preventing any one ISP link from becoming overloaded. When a certain percentage of one link is being used, the box shifts more traffic over to links that haven't reached their high-water mark, says Larry Pfeifer, Widener's network engineer. This is a core function of route control equipment, but it has value in helping users figure out how much more capacity to buy when traffic increases.

Before, if BGP was favoring one link, and it became congested over time, the school had to buy more bandwidth for that link. But it was never clear how much more bandwidth was really needed because BGP could be unpredictable, says Fred Franzel, a vice president at VenturesOnline, a hosting provider in Greenwood Village, Colo.

With route control, Widener now knows its traffic will be distributed across its links, so it can buy extra capacity from any of its ISPs based on how much traffic servers are generating. "Now we apportion bandwidth going out more fairly and use the full capacity we buy. It's huge," Pfeifer says.

Data gathered by route control gear in the course of performing its functions can be used to keep ISPs honest, says Scott Ellentuch, president of TTSG Internet Services in New York. The data TTSG gathers from Sockeye's route optimization service tells whether its ISPs are meeting SLAs.

TTSG also shares the data it gathers with its ISPs in hopes of encouraging them to improve their service, Ellentuch says. If the ISP sees that TTSG is diverting traffic from its link because performance is subpar, it might take steps to improve, he says. Or if it sees that traffic is being diverted because another ISP is less expensive, it might offer a better deal.

While route control gear can help customers avoid ISPs whose networks are congested, at the moment, sharing route control data about these problems with ISPs can help prevent brownouts. Sockeye gathers the information ISPs need to track down the roots of problems. "Providers demand a trace route, and this gives us the documentation we need," Ellentuch says.

VenturesOnline uses netVmg gear to pick ISP connections and hopes the equipment also can help the company pit its ISPs against each other as they bid to provide additional capacity, Franzel says.

With many users trying to connect to many customers' servers in VenturesOnline's data center, it was difficult to shift large amounts of traffic to underused links by manually adjusting BGP tables, Franzel says. The netVmg gear allows identifying and shifting large chunks of traffic automatically via preset policies so VenturesOnline can maximize use of its available connections. If the company needs more bandwidth, it can seek competitive bids from its three ISPs rather than being forced into buying more bandwidth from the provider that BGP favors. "We hope to get better-negotiated contracts for minimum [traffic] commitments," Franzel says.

The policies that automate route selection also save a lot of time, he says. "I was hand-writing policies on Juniper routers to adjust the BGP tables. I could make a change and 5 minutes later have to change it again," Franzel says. His company has Internet connections from Time Warner Telecom, AT&T and Yipes Enterprise Services, and changing route tables to balance traffic load was literally a full-time job. Now Franzel doesn't have to do any of the BGP updates, and the traffic is distributed more effectively than when he did them himself.

Northwest Multiple Listings in Kirkland Ore., gains benefits from using F5 Networks' Web acceleration equipment

that are similar to those gained by route control product and service users, says Raymond Williams, Northwest's network developer. Real estate agents who tap Northwest's database of properties for sale can access servers via connections with three ISPs, and F5's equipment keeps any one link from clogging up at peak times.

The F5 gear has enabled Northwest to dump BGP altogether and even give up its autonomous system designation, which is needed to participate as a BGP peer. Using the equipment also relieves the stress of making BGP changes that could affect performance of routers outside Northwest's network, Williams says. Dropping BGP also increased CPU availability on routers 10% to 15% and freed router memory that was maintaining BGP tables, he says.

While the unexpected benefits of route optimizing gear have been many for early adopters, it is important to keep in mind that the offerings, which can range in price from $15,000 to $250,000, also can result in big cost savings. For instance, TTSG is saving money with route control technology because it keeps the company from overrunning its minimum commitments. TTSG has dropped from paying $16,000 to $17,000 per month in bandwidth overruns to about $1,000 per month, Ellentuch says.

"[Route control gear] gives us more leverage with our providers because we can go back to them with specific performance information," he says.■

Zimon
Continued from page 53

Internet access. We've completed all network integration work associated with the merger of Boston Edison and Commonwealth Energy that formed Nstar.

On the computing side, about 90% of our servers are in our data centers. We have several types of Unix, but are in the midst of a consolidation in which we're moving all Unix servers to Sun Solaris SunFires.

They offer high availability and can back each other up. We have [Windows] NT servers and are moving to Windows 2000, and have mainframes running a couple of major applications that are outsourced to IBM. We manage the NT servers internally but outsource the Unix server management to IBM.

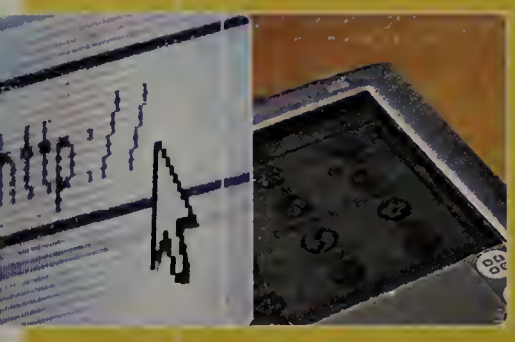
If you could change one thing about your network, what would it be?

Our network is basically sound. If we could change anything, it would be to automate security patches and updates for the network. From a technical standpoint, this could be done, but from a practical standpoint we have always had trouble with the automated update process. The other area would be to ensure more automated and proactive network performance monitoring and intrusion detection ... both of which we are working on.

What did you learn being on the vendor side that you've been able to use on the user side?

I was CIO at Boston Gas, then moved to Oracle [for nine months], where I got a much broader view of all aspects of the energy industry. I was responsible for helping Oracle with product development and to increase its penetration for this sector. I got a broad perspective on how partnerships should work between systems integrators and vendors, I viewed the product development life cycle and the approach to which products are released and tested. It certainly gave me an understanding of pricing structures in terms of what can and can't be done.

From a negotiating standpoint, I got a better perspective on where a vendor comes from. You've got to look at the four parties in any negotiation: the project manager and decision-maker on your side, and the salesperson and sales manager on the vendor side. They've all got different objectives and you've got to develop a negotiating strategy that results in a win-win situation since you're really building a partnership, not just beating the vendor.■



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"The human beings in our call center were often just typing into a system and reading back what's on the screen. The [virtual representative] can do that just as well — and a lot cheaper."

Raymond Zingaretti, Program manager, DLIS

TOMER

Four pioneers from different industries tailor CRM technology to better their customer relations.

BY ANN BEDNARZ

Nordstrom's salespeople are getting ready to throw out their little black books.

Instead of filling pages with hand-scrawled notes about customers' sizes and designer preferences, 20,000 sales clerks at the Seattle chain's 137 stores soon will be using new software and mobile devices to track their customers' tastes and match them to new merchandise arrivals and store promotions.

The applications, which will be available via new point-of-sale and mobile devices that are in development now, include Blue Martini Clienteling software for managing customer product information and preferences, and Blue Martini Relationship Marketing for creating targeted messages for customers. The software will gather data from sales transactions and correlate it with data the salespeople input.

What makes this aspect of Nordstrom's CRM effort unique is that it's intended for in-store employees. CRM rollouts usually stop short of the retail sales floor, and often, valuable customer data collected at the POS goes unused by retailers.

Historically, the three pillars of CRM have been sales, marketing and service. Sales applications were built around salesforce automation and have grown to include account management, opportunity management and incentive compensation management. Typical users are direct sales staff and the management teams who monitor sales pipeline information.

Marketing applications run the gamut from advertising and e-mail marketing campaigns to lead management and customer analytics. Typical users are in corporate marketing departments. Service applications encompass field service automation and contact center capabilities. Typical users work in call centers or in the field handling customer service requests.

But after a blizzard of high-profile CRM failures over the past few years — marked by unrealistic goals and ill-suited functional choices — companies are looking not just at the three traditional CRM buckets, but at what makes sense for their businesses.

For Nordstrom, what makes sense is getting customer information to retail sales personnel in real time, whether those customers are conducting business on the Web, in the store or over the telephone.

In Nordstrom's case, if a new shipment of a specific brand of shoes arrives in the store, a salesperson could be prompted to notify customers who like that brand, either by sending an e-mail message or calling a customer directly, depending on the customer preferences.

Typically, those who are selling on the retail floor depend on walk-in traffic to make a sale. Blue Martini's software gives Nordstrom's salespeople a virtual edge to establish stronger ties with their repeat customers.

Service with a smile

Even though CRM has been around for at least a decade, customer service remains a trouble spot, particularly over the Internet.

In its latest study, CustomerRespect.com found that 37% of Fortune 100 companies offered no reply to a general inquiry submitted to their Web site — despite offering either an online form or e-mail contact.

But that's not the case with Defense Logistics Information Service (DLIS). This division of the Defense Logistics Agency within the Department of Defense has made online response a high priority.

From its Battle Creek, Mich., base DLIS provides electronic catalogs and other reference information on all items of supply in the Defense Department — that's a whopping 6.5 million active items. Military and civilian personnel use the catalogs to order supplies and materials. In all, the DLIS supports 18 wholesale sites, 578 retail sites, 2.25 million Defense Department employees and 40 international governments.

The DLIS has had a call center for many years to handle phone and e-mail inquiries, as well as a Web site. But a 1999 study showed DLIS that it wasn't making the most of its expensive call center resources. The study revealed that about 70% of inquiries were basic questions about logistics information management products and services.

A team at DLIS set out to make its Web-based resources more user-friendly — hoping to offload some of the repetitive calls. DLIS created a Web-based "virtual representative" using NativeMinds' NeuroServer technology, which runs on Microsoft Windows and

employs pattern-matching technology that interprets question type, context and subject, and applies algorithms to determine the best answers from among data sources.

The DLIS vRep, named Phyllis, provides automated, round-the-clock customer service.

"The human beings in our call center were often just typing into a system and reading back what's on the screen. The vRep can do that just as well — and a lot cheaper," says Raymond Zingaretti, program manager at DLIS.

The vRep is more than a simple search tool, Zingaretti says. The vRep has a human face, to make interactions less intimidating. And instead of simply returning a lengthy list of documents that contain a particular keyword, Phyllis can engage in a dialog with a user to determine what the user needs.

Phyllis — named after FLIS, or the Federal Logistics Information System — answers customer questions, phrased in natural language, with conversational dialogue. It can interpret what people mean, Zingaretti says.

Someone looking for an item name that they need for a requisition form might ask Phyllis, "What is the proper item name for XYZ?" The old Web way required users to browse the Web site and find the online section for products, find the application that will help look up item names, type the item description in the search box, hit enter and get the results, Zingaretti says. Phyllis can search the appropriate database and return the answer in one step. "Phyllis gives our customers an easier, more direct way to find the information they're looking for," he says.

The vRep's expressions change from happy to confused, depending on whether she can provide an answer to a customer's inquiry. Phyllis portrays a disappointed look to profanities and then reprimands the asker: "Excuse me, I'd be glad to handle your question, that's no problem, but I'm not able to handle your abusive language."

This consistency of answers and attitudes is a benefit that can't always be achieved with live personnel. "With the vRep, no matter how many times the question gets asked, you get the same answer," Zingaretti says.

Zingaretti and his team review Phyllis' conversation logs daily and constantly update its database to provide better service. Usage of the vRep is climbing steadily. Phyllis' accuracy rate hovers at about 85%, Zingaretti says.

Travel time

The good news for travel and hospitality companies is that online travel sales are hot.

Research firm comScore Networks reports that online travel sales represent the largest consumer e-commerce category, and its growth continues to outpace the non-travel sector. Travel is gaining an increasing share of total consumer online dollars: 43% in the first three quarters of 2002, up from 39% during the same period last year.

The bad news is, along with opportunity comes competition.

Six Continents Hotels — which has assets that include the InterContinental, Crowne Plaza, Holiday Inn, Holiday Inn Express and Staybridge Suites hotels — is using CRM to fuel its online sales efforts. Personalized, stellar service is key to its efforts, says Del Ross, director of Internet business at Six Continents.

"Our product is more than a comfortable bed and a clean room," Ross says. "Our product is every interaction that you have with us, from the moment you start thinking about your trip to when you turn in your key."

The hotel chain recently completed a migration from multiple Web platforms to ATG's Commerce Suite, which runs on Windows, Solaris or Hewlett-Packard's HP-UX.

With ATG's Scenario Personalization technology, Six Continents is working on marketing campaigns and personalized offerings. The new Web site features include the ability to store favorite hotels, so business travelers can save their preferences. The Web site automatically will display the rates for which the person qualifies. "We can make the reservation itself an almost-effortless exercise for them," Ross says. "They pretty much just have to tell us whether they want to order breakfast in the morning or not."

In addition to its new ATG software, Six Continents has new wireless reservation services to capture the business of people who make travel plans while in transit. With the wireless services, people with Palm VII devices and Web-enabled mobile phones can search for hotel information, make reservations, receive itinerary and confirmation information, and access their customer loyalty accounts.

The two upgrades share a common goal of improving customer service. "The combination of the economic environment, the competitive environment and the political environment has made people very conscious of value," Ross says. "They want to know that their business matters to you."

RAYMOND ZINGARETTI, PROGRAM MANAGER, DEFENSE LOGISTICS INFORMATION SERVICE

Don't depend on a software vendor to know what's best for your company. Take time to really learn what the CRM software can do, and apply that knowledge to your business.

EARLY ADOPTERS' DOs AND DON'Ts

Do

- **Consume CRM in digestible doses. Experts recommend a regime of short, focused CRM projects, rather than a massive rollout.**
- **Align business and IT objectives. Defining CRM project goals and making technology choices should be group decisions.**
- **Use your peers. Get customers references from each vendor on your shortlist, then contact those references.**

Don't

- **Skimp on data quality. Customer, product and transaction data needs to be clean and properly formatted to be useful.**
- **Forget about end users. If employees aren't properly trained and committed to using new CRM software, the implementation will be a failure.**
- **Skip the pilot. Ask vendors to provide software and support for a pilot before making any final decisions.**

GEORGE WALDMAN

Call center savvy

LightBridge is focusing much of its CRM energy in the call center — it's the lifeblood of its business.

LightBridge, of Burlington, Mass., makes credit-checking and fraud-detection software, and provides outsourcing services for communications providers. Its specialty is handling call center operations for companies that offer mobile services, which require screening, qualifying and activating new wireless customer accounts. Last year, 300 LightBridge agents handled more than 12 million calls.

To handle growing call center volumes while keeping costs in check, the company recently completed a $2 million renovation of its call center operations, deploying Blue Pumpkin workforce optimization software and Genesys call routing software.

From Blue Pumpkin, LightBridge is using Director-Enterprise, Activity Manager and Advisor. The applications, running on Windows servers, handle tasks including planning workforce levels, monitoring the skills agents acquire, tracking how agents spend their time and measuring employee performance against corporate expectations.

From Genesys, which is a division of Alcatel, LightBridge has rolled out Enterprise Routing, which lets it route calls based on real-time statistics, customer-stored data and customized business rules; and Internet Contact, which lets LightBridge integrate e-mail management and Web-based interaction capabilities into its call center. The Genesys suite runs on a Solaris platform.

Recently, LightBridge made one minor routing adjustment that's saving the company $150,000 a quarter by reducing headcount requirements, says Kelly Stropp, call center operations manager. LightBridge typically maintains multiple small call queues, each staffed by about five agents. With the old call routing system, some agents were achieving only 30% utilization. Fine-tuning the Genesys system to better monitor queues and route calls to the most appropriate agent has helped LightBridge increase its agent utilization average to more than 65%.

Lighter-weight skills-based routing products couldn't give LightBridge that flexibility, Stropp says. Manual scheduling techniques are too unwieldy to adapt on the fly to changing conditions. "That's what really gives us the savings — scheduling correctly to the new call routing," he says. ■

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Cost-Effective Consolidation Solution

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- Integrated Layer 2 Managed Ethernet Switches

Consolidate with Dell Blade Servers and dramatically lower TCO. Dell PowerEdge™ 1655MC Blade Servers, powered by Intel® Pentium® III processors, represent the future of server design as well as a more cost-effective way to start consolidating your web, network infrastructure and application servers. Our small, 3U/6 blade chassis is cutting-edge, and it easily fits into your existing power rack and administrative infrastructure. With Dell PowerEdge MC Blade Servers, you can expect:

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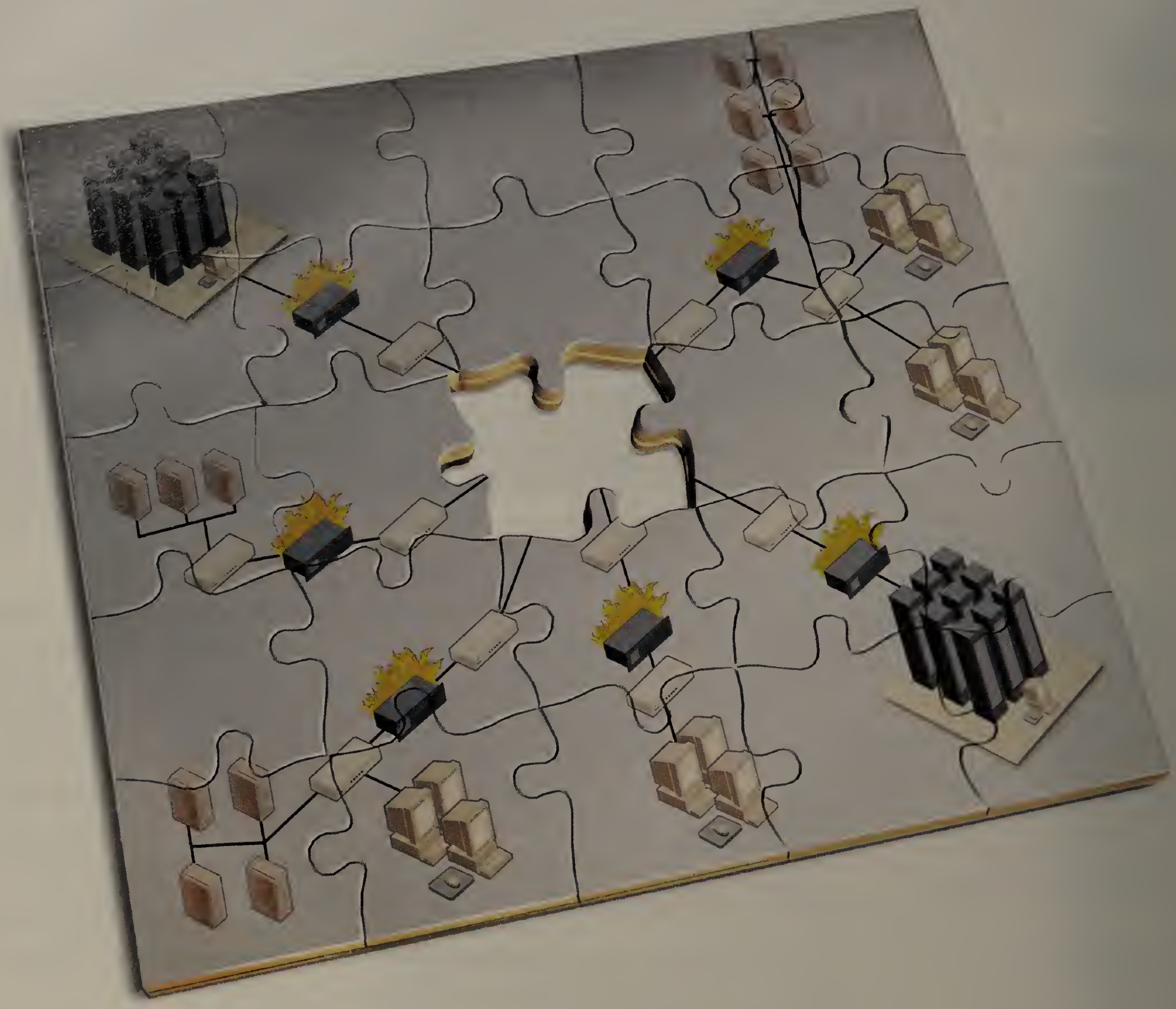

Today's ever-growing data centers make it harder than ever to get hands-on control of all your servers and network devices. Now you can have direct access to every device in your data center from any location, all from a single screen. Manage and maintain servers in your local rack or across the world.

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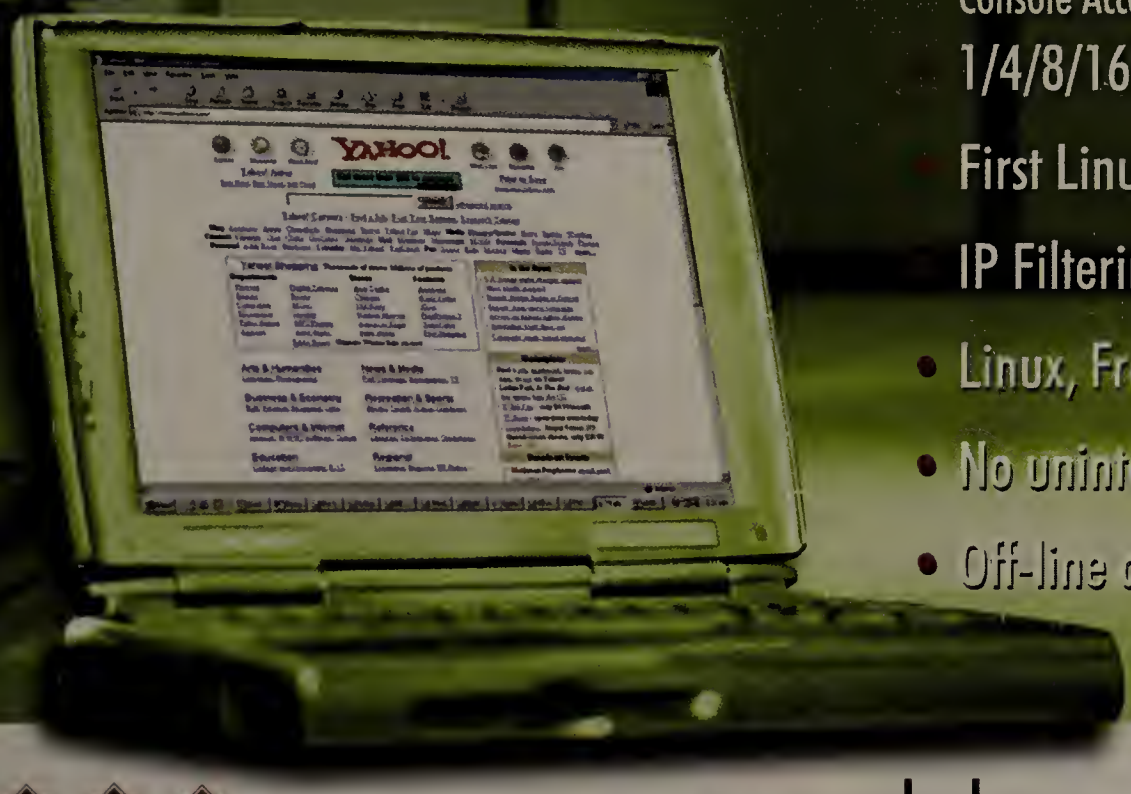

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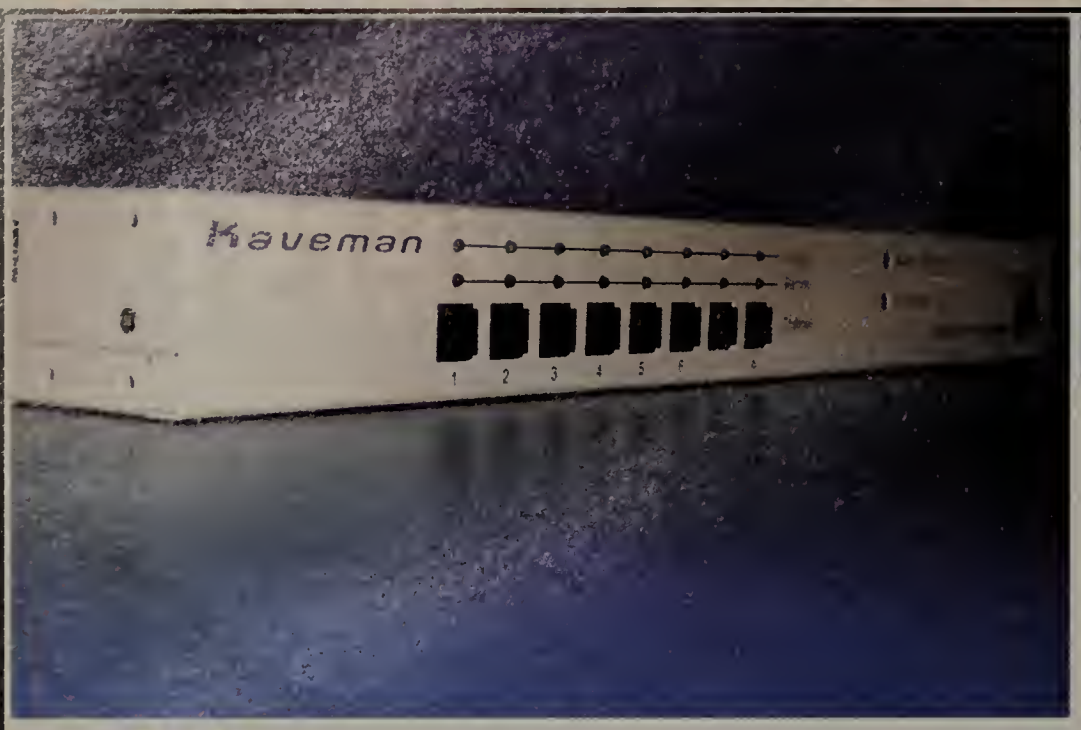
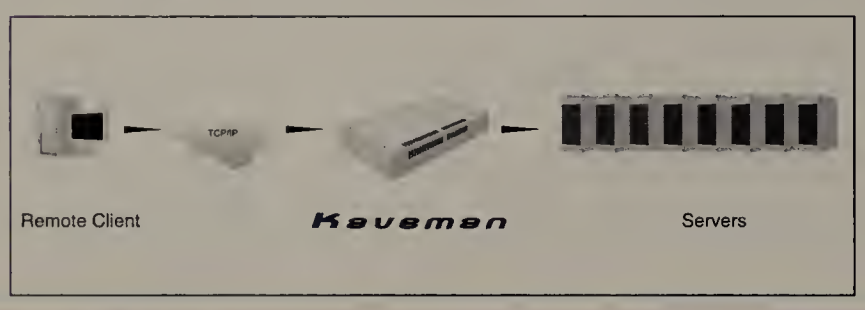


Kaveman

COMPLETE KVM CONTROL VIA TCP/IP



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The UltraLink digitizes the remote computer's video. It then scales, compresses, encrypts, and packetizes it into the TCP/IP protocol. At your PC the free Viewer application receives and displays the video and sends back keyboard and mouse data. This process allow you to access remote computers from anywhere.

Rose is a leading manufacturer of switching, extension, and access products. As a KVM industry pioneer, Rose is known for its technically superior and price competitive products.

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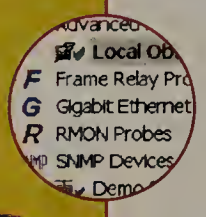

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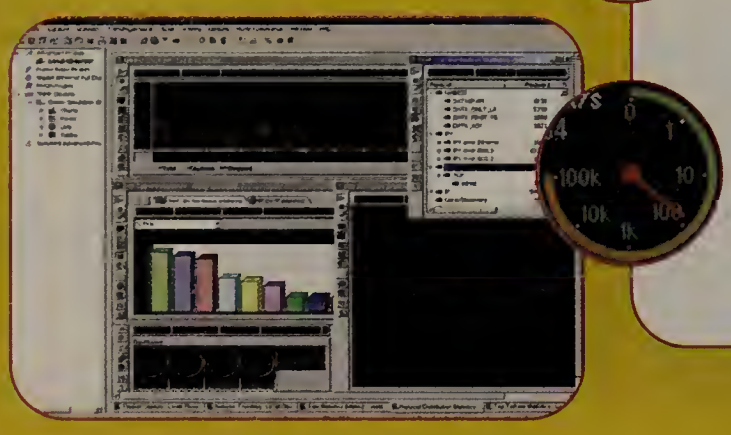

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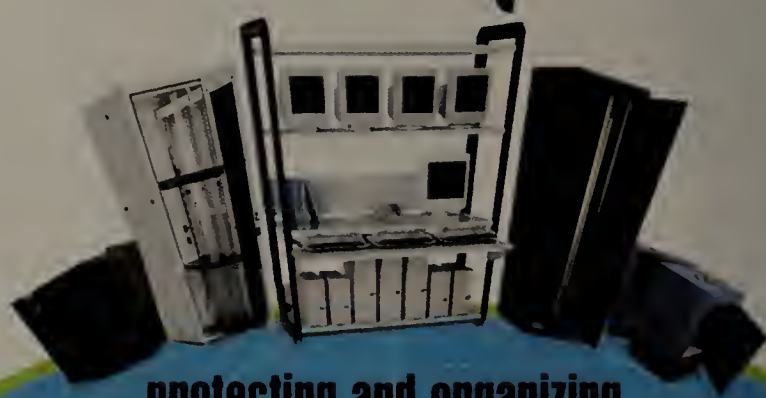

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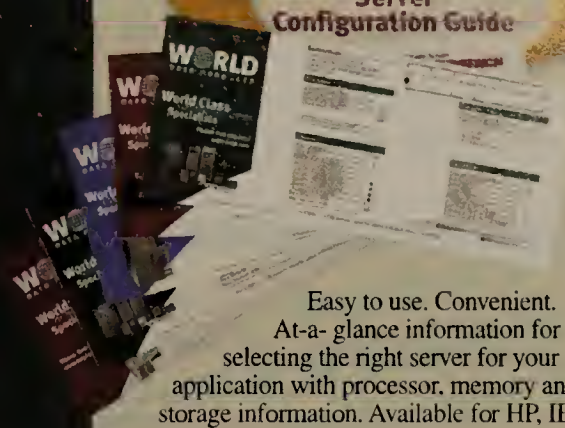

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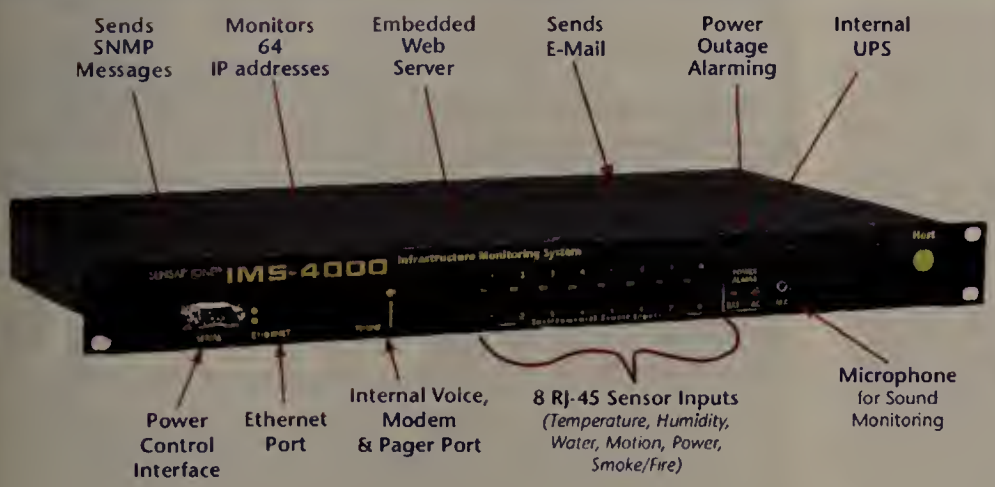

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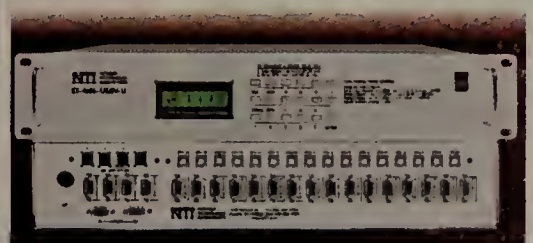

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• At least 5 yrs exp as a computer professional, including not less than 2 yrs exp in Rational Rose, DB2, EJB, Java, Websphere, Visual Age.
• At least 2 yrs exp as a computer professional, including 2 yrs exp in MS-Translation Server, Visual basic, Developer2000, MAGIC, Oracle, and SQL Server and at least 6 mos. experience in Dream Weaver, PowerBuilder and Sybase.
• At least 3 yrs exp as a computer professional, including 2 yrs exp in SAP, Java, HTML, ABAP, BEA Weblogic, and 1 yr exp in Webmethods B2B Server and Enterprise Server, EDI, and Cognos Power Play.
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Candidate's salary relative to experience and skills. Multiple positions may be available for some positions. Candidates must be willing to travel and relocate as needed.

Please send resume and cover letter to: Janet McVay, Administration Manager, Infinite Computing Systems, Inc.,230 Second Street SE, Suite 214, Cedar Rapids, Iowa 52401

Quad/Graphics: SOFTWARE DEVELOPERS: Sussex, WI, Job Title: SOFTWARE DEVELOPERS. Job Type: Full-time. Company Name: Quad/Graphics, Sussex, Wisconsin, Country: USA, 53089. N63 W23075 Main St Sussex, WI. 53089.

Selected candidates will be part of team responsible for full-life cycle software development. BS in Computer Science or related major required for all positions. Additional requirements for: Software Developer - experience with OO programming (C++, Java, PowerBuilder) plus relational database (SQL). Programmer Analyst I - experience using Powerhouse, VB and SOL/Oracle DB. Overtime as needed, including evening/weekend hours to support 24/7 operations and minimize user disruption.

SYSTEM ANALYST/PROGRAMMER. Gather and model user requirements through business process modeling & use cases in a modeling tool & to design application services in UML using Object Oriented analysis and Design techniques. Requires B.S.C.S. or equiv., plus 4 year exp. In computer analysis, design & coding, to include 2 year exp. In documenting requirements in design models for web application, and designing and developing web applications using Microsoft tools, including Visual Studio, Visual Basic Interdev, COM & SQL Server. Knowledge of MTS & XML required. Job & interview in Lakeland, FL. Competitive salary. Send resume to Attn: IT Placement Office, Publix Super Markets, Inc., P.O. Box 32015, Lakeland, FL 33802. EOE.

Programmer/Analysts & Software Developers, Delphi wanted for multiple positions. Will be assigned to various client sites throughout the United States to program, analyze, test, troubleshoot and develop Delphi software as a front end for use in multiple RDBM (such as Foxpro, Oracle, Interbase and Sybase) legacy informational systems installed in a distributed client server environment including implementation in an intra/internet environment. May use tools such as MIDAS, SOAP, COM/DCOM, Object Pascal, ASP, ADO, XML, Web Logic Server, T-SQL, COBRA, DLL, TOAD, Quick Reports, IIS, Swing, JSP, or CSS as required in performance of duties Requires Bachelor's Degree in Computer Science, Math, any Engineering field, any Physical Science or any related field. Also requires one year direct experience. We also have similar positions available for multiple Java Developers who may be required to use J Builder, J Developer, Weblogic, Websphere, JDK, EJB, ETL, Java Swing, Corba, Jdbc, or XML/XSLT as dictated by particular project assignments. One more position available for Database Systems Analyst, Datawarehousing, using Informatica, Cognos, PowerPlay, Impromptu and Microstrategy, and one position available as a Mainframe Programmer/Analyst using SPUFI, QMF, Abendaid, Savrs, and Assembler. All positions require a Bachelor's Degree in one of the fields mentioned above and one year experience in the job to be performed. For Delphi positions please send resume (no calls) to Delphi HR, Genome International Corp., 583 D'Onofrio Dr., Madison, WI 53719. For other positions, please send resumes (no calls) to HR, Genome International Corp., 583 D'Onofrio Dr., Madison, WI 53719. Applicants must have authorization to work permanently in the United States.

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Programmer/Analysts (KPG, Inc., Metro STL): 1) Mainframe position: test, and implement sys apps. using MVS, TSO/ISPF, Panvalet, JCL, COBOL, Assembler, Lotus Notes, Windows NT, SNA, and X.25; perform abends/core dumps analysis, debugging and test scripts. 2) Web Apps. position: develop modules using ODBC, ASP and Stored Procedure; write SOL calls against MSSQL dbs; develop/maintain Client's Search Engine; design Client's Register Forms using ASP, VBScript, JavaScript, COM Object on Win/2000; plan Intranet project using Java Beans, JSP and JavaAWT; design artwork w/ 3D Studio Max, Photoshop and Illustrator. Req. BS/BA or the equiv. in CS, EE, CIS or MIS plus min.6 mon. exp. Full time/competitive salary. Resume to ad@kpginc.com. No calls.

ORACLE SYSTEMS ANALYST: Implement Oracle based computer system using Oracle Financial & Developer 2000 software together with Visual Basic & Java programming languages for Accounting, Marketing & Human Resource Depts; test system for req. specifications; generate & document protocols for end user Co. employees; create and implement WEB based business model to enable Co. to competitively market its 400 products on internet; create LAN. Requires: BS in Management Information Systems or equivalent, and 1 yr. exp. In position. Sal. $50,000/yr. Send resume to Human Resource Director, SMG Inc., 30 W 250 Butterfield Rd, Ste 310, Warrenville, IL 60555.

OH Insurance Co. seeks Analyst II to work with process teams to define process requirements & model workflow. Conduct research utilizing data extraction, statistical analysis techniques to test process variables, analyze trends, identify issues & opportunities, and summarize results for management consideration. Candidate must possess: Bachelors degree, or equiv., in Finance, Statistics or Electronics Engineering and min. 2 years of related work experience. Exp. with IBM Mainframe, JCL, File Aid, ISPF, SOL, DB2, and MS Excel required. Aptitude for critical thinking, problem resolution, project management, analytical skills and the ability to translate analytical results to decision making. First party applicants only, send Resumes to HR Department, 6055 Parkland Blvd., Mayfield Heights, OH, Box EM12 ad code CC1. No calls. Equal Opportunity Employer M/F/D/V.

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S/W Engineer

Design, develop, implement & support busin./tech. info. technology solution encompassing multiple specialization, platforms & technologies including Windows (C++, VB and .NET), Palm OS (C++), Pocket PC (C++), COM+, ASP, XML/XSLT and SQL Server. Req: MS in Elect. Eng., Comp. Eng. or Comp. Sci. 40 hr/wk. Job/Interview Site: Peabody, MA. Send resume to Security Source, Inc., One Centennial Drive, Peabody, MA 01960, Attention: Human Resources.

Director of Sales & Consulting. Manage sales & bus. development activities of ERP software product; Support sales personnel w/ business analysis & technical expertise; Manage implementation process of ERP software for internal & external customers; Manage key customer accounts; Act as liaison between sales department & foreign based R&D dept. Requires MBA. w/ Bachelor's in Science or Engineering, plus two yrs. exp. managing ERP systems implementation projects. Mail resumes: Human Resources, QlikTech Inc., 3737 Glenwood Ave., Ste. 100, Raleigh, NC 27612

Business Intelligence Consultant: Chicago. Develop front-end client solutions using integrated business analytics (Informatica PowerMart) and business intelligence solution tools (Brio Performance Suite) for data query, analysis, enterprise reporting and global information delivery; data warehousing extraction, transformation and Load (ETL) process. Use RDB (including 3nf, start and snow flake schema), Java, ASP, C++, SQL and case tools. Requires BS computer science or IS and education or experience in data warehousing and mining. Email resumes to: recruit@activeinterest.com

Analyst/Architect sought by NJ based Securities Dealer for position in Chicago office. Must possess Bachelor's degree or equivalent in Computer Science or directly related field and 5 years exp. in software development/design/analysis. Exp. must include C/C++, JAVA. Respond to: Human Resources Department #KFP02-98: Knight Financial Products, 130 Cheshire Lane, Suite 102, Minnetonka, MN 55305.

Technical Support Specialist: Maintain computer system files & servers; trouble shoot & expand internal network/work stations; interact with customers to obtain computer graphical files; coordinate e-meetings; install, maintain & implement networking/servers; provide training. Req.: 2 yrs in job offered or 2 yrs in related occupation. Send resume to Stand-Out Services #726, 3162 Johnson Ferry Rd. Ste 260, Marietta, GA 30062. Ref MS

IT Support Analyst, Wachovia Corp. Charlotte, NC. Manage IT project initiatives incl. system implementation and system upgrading within the futures clearing and the equity derivatives groups. Maintain data integrity as well as functionality within Sungard GMI. Reqs. BA in Finance or MIS & 3 yrs exp. which must incl. work w/ futures clearing services & settlements & equity derivatives operations including equity swaps & equity OTC options and must have incl. work w/ Sunguard GMI software or another software package that manages futures & options positions. 40hrs/wk, Send resume & cvr. ltr. to Sheri Izzo, 301 S. College Str., NC1115, Charlotte, NC 28288. No phone calls please.

Software Engineers & Programmers: Design, develop, test and implement specialized ERP and CRM applications in JD Edwards One World and related tools, XML, C, RPG, SQL Server, and DB2/400. Prevailing wage/benefits. Triton Infotech, Inc., Attn: HR, Silverside Carr Executive Center, 501 Silverside Road, Suite 139, Wilmington, DE 19809. No Phone calls please. EOE.

Database Analyst wanted to analyze, develop and maintain reports and various programs. Must have a Bachelor's degree or foreign equivalent degree in Business Administration, Computer Science or a related field and at least 1 year of experience in application development or business analysis. Experience must include SQL. Mail resumes to Recruiting Director @ Virgin Mobile USA, LLC, 10 Independence Blvd., Warren, NJ 07059.

Corpus is seeking IT professionals/engineers. Qualified applicants must have BS with 1yr/min exp. Skills in SOL, PL/SOL, COBOL, C/C++, VB, SAP, TCP/IP, NT, Java, XML, COBOL, ERP (PeopleSoft, AR/AP), XSL, ASP, Oracle are plus. Sent resume to info@corpusinc.com. EOE

Engineer / Programmer wanted by Eagle Technology. Responsible for Java, client/server programming; create triggers, write code, use VB, Oracle, PL/SOL, Transact/SQL. Require BS or equivalent with 1-yr exp. Email resume to: stacy@eaglecmms.com. EOE

Software Engineer: Researches develops computer graphics software for import/export of Macintosh/Windows vector/raster using C/C++ under MS Visual Studio; develops/tests tech. drawing features according to national/int'l drawing stds.; works on the internalization of products using Unicode/multibyte processing in various language/regional environments, including Far-Eastern countries. Req. Bach. in Engineering, rel./equiv. & 4 yrs. exp. Resume: J. Miranda, Deneba Software Inc., 1150 NW 72nd Ave, Suite 180, Miami, FL 33126. No calls.

Software Engineer to design, develop and test microprocessor-based industrial analytical instrumentation. Will work as part of a team of engineers designing and developing next generation of products for analysis and control of water treatment, waste water treatment, and plating applications. Will develop cross platform multi-tier real-time embedded applications. Will design intelligent web based applications backed by databases. Requires Bachelor's Degree in C.S. or Electrical Eng. and one (1) year experience in job offered or one (1) year experience in software research or development. Candidate must also possess demonstrated expertise using C/C++ programming language; and demonstrated expertise in real-time operating systems. Salary $67,200/yr; Mon-Fri, 9:00AM-5:00PM. Submit two (2) copies of resume to Case #2001-13154, Labor Exchange Office, 19 Staniford Street, 1st Fl., Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United State on a full-time basis.

Software Specialist II. Analyze & validate system requirements for client-server & mainframe-based software applications including the Wheatley Insurance System. Perform coding & data conversion activities, conduct performance testing, & provide technical support to ensure that systems & customer requirements are met. Identify potential problems with application systems performance, file structures, databases & systems integration, & interact with Information Systems personnel & users to provide technical solutions. BS in Computer Science, Engineering, Mathematics, or a related field & 2 yrs exp. in job offered or related occupation. Experience must include one year using technologies such as DB2, IBM Visual Age Java & Websphere with the Wheatley Insurance System. Applicant must be bondable & drug screening required. 40 hrs/wk., $60,000/yr. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 215 Watson Powell Jr. Way, Des Moines, Iowa 50309-1727. Please refer to Job Order IA1101644. Employer paid advertisement.

Legal services information company with offices in Houston, TX has openings for senior software engrs & software engrs with exp in the following: J2EE, Java 2, EJB, JRun, Pro*C, Lazorfische, Kofax, Nouveau, IIS, MTS, Oracle, MS SOL, ASP, VB, MSMQ, VBScript, Javascript, MS Biztalk Server, MS Commerce Server, COM+, HTML, XML, C# & the DotNet framework. Analyze, design, develop, test and support web-based e-commerce applications. Resumes to CCH Legal Information Services, 111 Eighth Ave, NY, NY 10011.

Software Engineer: Must have B.S. Degree or equivalent in a computer related field and 5 years of progressive work experience as a programmer analyst or related field. Programmer Analyst: Must have B.S. Degree or equivalent in a computer related field and 3 years of progressive work experience as a software engineer or related field. Location: 300 N. Dakota Avenue, #208, Sioux Falls, SD 57104. Send CV to Attn: Madhukar Gangadi, TechNation Software Consulting, Inc, at Fax: 605-338-7507 or madhukar@tnscinc.com

Sycamore Networks, Inc., is the leader in Intelligent Optical Networking. Our products are laying the foundation for the next generation telecommunications infrastructure by bringing intelligence to the massive installed public fiber optic network. We have the following positions available at our office in Chelmsford, MA:

- Vice President, Worldwide Sales and Support
- Vice President, Sales - Americas
- Director, System Engineering
- Account Manager - East Coast

The aforementioned positions require a minimum of a B.S., M.S. or equivalent experience, and 3-8 years of industry experience.

For all positions, send resumes to: Staffing, Sycamore Networks, 220 Mill Road, Chelmsford, MA 01824, Fax: (978) 256-3434, OR e-mail: resume@sycamorenet.com

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Reg Berka, 1100 Nasa Rd 1, Suite 606, Houston, Texas 77058 or email to: rberka@aphelion.net

Chief Information Officer sought by NJ based Securities Dealer for position in Chicago office. Must possess Bachelor's degree or equivalent in Computer Science or directly related field and 5 years exp. in software development/design/analysis. Exp. must include C/C++, JAVA. Respond to: Human Resources Department: KFP02-99: Knight Financial Products, 130 Cheshire Lane, Suite 102, Minnetonka, MN 55035.

Computer Programmer: Customize corporate LOS using C; design & implement web application for online loan application using ASP/COM & Stored Procedures; publish Crystal Reports on intranet using RDC. Req Master's degree in CIS, CS or related discipline plus 2 yr work exp. in C, RDC, ASP/COM and Stored Procedures. Hrs: 8a-5p, M-F. Send resume to Homestar Mortgage Services, LLC 400 Northridge Rd Suite 650 Atlanta, GA 30350. Ref TY

Paymap, Inc., a Division of First Data Corporation, a company in Greenwood Village, CO specializing in e-commerce transaction payment services, has an opening for a Software Quality Assurance Analyst to work in San Francisco, CA and other unanticipated job sites in the U.S. Perform quality assurance of client-server financial and back-end applications in a multi-branch, multi-user environment. Requires a bachelor's degree in computer science or business with a concentration in finance; 1 yr. exp. as software quality assurance analyst for Money Management software; and working knowledge of UNIX, SQL Server, Oracle relational database, Sanchez Profile, PFW banking applications, Oracle Financials, NACHA rules, GAAP (G/L, A/P, A/R modules), revenue recognition, financial reporting; and Rational or Silk. Respond by resume to Norm Barnett, First Data Corporation, 6200 S. Quebec St., Greenwood Village, CO 80111 and refer to job #4440OS.

Applications Support Analyst, Ontario, CA. Consult w/ SAP consultants to identify & analyze SAP processes & issues. Redefine SAP processes & recommend & help implement changes. Change, maintain & document Warehouse SAP processes as per ISO 9002. Assist QA Dept. & processes, & act as Internal ISO Auditor for Configuration Ctr. "Write up" user needs, prog. functions, & steps to develop/modify relevant programs & syst; prepare workflow charts & diagrams re same. Assist in resolving work problems re: flow charts, project specs, programming. BS or equiv + 1 yr experience, incl. QA. Fluent SAP R/3, AllClear, Visual C++ & C++, HTML, ASP, Rational Rose. Send resume to VP, HR, En Pointe Technologies, 100 N. Sepulveda Blvd., 19th Fl., El Segundo, CA 90245.

Spiral Aviation Training Company has an opening in our Englewood, CO office for a Flight Simulator Engineer to design and develop visual interfaces, instructor facility station interfaces and various aircraft system applications for full flight simulators of Boeing 737 and other aircrafts. Successful candidates will have a bachelor's or foreign equivalent in Computer Science, Engineering or related field (including Civil Engineering) and five years experience designing and developing interfaces or computer application systems in Unix and/or Windows environment for full flight simulators. Candidate must also have working knowledge of Powersoft Power ++ and Jeppesen. Respond by resume to SATCO, 7347 S. Revere Pkwy., B300, Englewood, CO 80112.

Technical Lead using Oracle & PL/SQL. BS or equiv Eng'g or Comp Sci + 5 yrs exp -or- MS Eng'g or Comp Sci. Salary DOE. Resume to M. Cardenas, Warner Music Group, 3400 Riverside Dr., 6th Fl., Burbank, CA, 91505. Ref Ad# 434. Principals only. Legal work auth req'd. EOE

Software Dev Engineer - Design, code, test, & maintain software related to user interface-related technologies & projects using C/C++, Pro C, Unix, GUI development, Oracle database, TCP/IP, and PL/SQL. Apply principles, theories, & concepts & use methodologies, tools, documentation processes, & test procedures to complete projects. B.S. in Comp Sci or related field plus working knowledge of C/C++, Pro C, Unix, GUI development, Oracle, TCP/IP, & PL/SQL. Denver, CO. M-F. 8am-5pm. $70k/yr. Application by resume only to: Employment Programs, PO Box 46547, Denver, CO 80202. Ref. Order#CO5033044

Sr. Software Engr-Develop IP cores for multimedia LSIs & ASICs & write device drivers using SCSI & FCIP protocols. Debug h/ware/s/ware for USB-to-ATAPI device designs using logic analyzers & oscilloscopes. Write device drivers on BSDI & LINUX operating systems. Bach's deg in Comp Sci, Physics or Elec Engrg reqd + 4 yrs s/ware engrg exp. Fax resumes to: 408-551-4490. Attn: Mgr of Operations.

Computer Professionals needed w/exp in: using Java, EJB, XML, JSP, Weblogic, Websphere, Oracle, DB2, Sybase, Informix, C, C++, Visual Basic, SQL Server, XSL and Tomcat. Send resumes to: Boniva Software, Inc., 2620 Augustine Drive, Suite #238, Santa Clara, CA 95054.

Jr. Programmer Analyst. Asst in writing programs in progress, 4GL & Webspeed using UNIX, Windows Xp operating systems for EDI 850/856 mapping & using X12 standard. Provide support for internet production tools. Req: Bachelors in Comp. Sci., Comp. Eng. or Electronics Eng. 40 hr/wk. Job/Interview Site: Brea, CA Send resume to Kirkhill Aircraft Parts Company, P.O. Box 3500, Brea, CA 92822.

Software Engineer-Develop and maintain mgmt systems utilizing VC++, Java Servlets, JSP, Java Beans, Websphere, Oracle, etc. Construct systems and database management via internet/intranet-based multi-user apps. & multi-tiered client/server development; Min. 4/yrs exp. in job offered or related position with same duties and B.S. in Comp. Sci., or related field. Exp. ref. required. Contact: Stratus Sol. Inc., 2500 Clairview St., Alpharetta, GA 30004

SOFTWARE ENGINEER III-Salt Lake City area for a Pennsylvania-based company. Bachelor's in CS or a related field plus 2-3 years of experience in an IT environment needed. A good working knowledge of Computer Science and related programming languages required. Please apply by sending 2 copies of your resume to: Siemens Medical Solutions, Human Resources, 51 Valley Stream Pkwy., Malvern, PA 19355, FAX: 610-219-8266, email:human.resources@smed.com. EOE/AA.

Noetix seeks S/W Engr. for HQ office in Bellevue, WA. DESC: Arch. & dsgn .NET apps. & s/w sys. util. C#, UML, & web services. Dsgn, dev, & impl. RDBMS multi-tiered distrib. apps. util. SQL, C/C++, OO prog, XML, & Win o/s. Dev. compilers & parsers for d/b apps. Participate in app.-wide arch. decisions. Dev. & maint. unit test mng. sys. Util. source code mng. s/w to track dsgn & dev. changes. REQ: BS in Engr, CS, Math or Phys. or equiv. + 1 yr. exp dsgn, dev, & impl. RDBMS & c/s apps. util. SQL, OO prog, & C++ on Win o/s. In add., 6 mos. exp. C# & .NET prog. Prem. sal. + benes. Pls. reply to J. Hubbs, Job #NC-108, 2229-112th Ave NE, Ste. 200, Bellevue, WA 98004.

SolutionsIQ seeks DB Engr. for HQ office in Bellevue, WA. DESC: Dsgn, dev, & impl. RDBMS util. SQL & rel. multi-tiered dist. apps. util. VB, COM, ASP, Active X, script. langs, XML/XSLT on Win. REQS: MS or BS in Engr, CS, Math, or Physics or equiv. + exp. dsgn, dev, & impl. RDBMS & rel. apps. util. SQL, VB, & Win o/s + 1 yr exp. util. ASP, COM, script. langs, XML/XSLT. Prem. sal + benes. Pls. reply to A. Johnson, Job # SIQ-213, 1260-116th AVE NE, Bellevue, WA 98004.

ANALYST/ARCHITECT sought by NJ based Securities Dealer for position in White Plains, NY. Must possess Bachelor's degree or equivalent in Computer Science or directly related field and 5 years exp. in software development/design/analysis. Exp. must include C/C++, JAVA. Respond to: Human Resources Department #KFP02-98: Knight Financial Products, 130 Cheshire Lane, Suite 102, Minnetonka, MN 55305.

Computer Programmers, Liquor Distribution Co. Multiple openings. Minimum Bachelor's in Computer Science/related field or its equivalent in training, education, and/or experience. Computerize all records, vendor files, payroll, inventory. Maintain and configure databases. Provide technical support. 40 hrs/wk, 9AM-5PM. Competitive Salary. Send resume to: Whale Enterprise, 5730 Oakbrook Pkwy., Ste 175, Norcross, GA, 30093.

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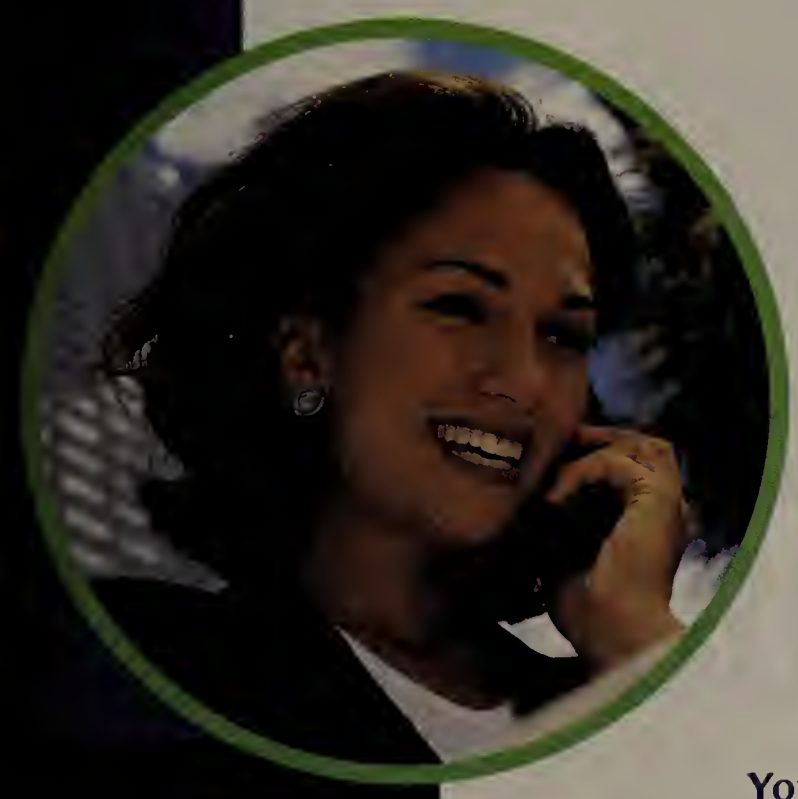

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BackSpin Mark Gibbs

The total information monster

In the Fox News story "Pentagon to Track American Consumer Purchases" it was reported the Pentagon said, "A massive database that the government will use to monitor every purchase made by every American citizen is a necessary tool in the war on terror."

The idea behind the government's proposed database is, according to Edward Aldridge, undersecretary of Acquisitions and Technology, to look for "patterns indicative of terrorist activity."

Aldridge said the government would be looking for "sudden and large cash withdrawals, one-way air or rail travel, rental car transactions and purchases of firearms, chemicals or agents that could be used to produce biological or chemical weapons."

Moreover, this database is to integrate that consumer data with visa and passport records, arrest records and reports of suspicious activity given to law enforcement or intelligence services.

It is hard to say how big such a system would be. The storage certainly would be up in the petabyte region and the processing power required would be staggering even to handle basic cross-referencing, let alone pattern analysis.

And who will be in charge of this behemoth? Well, President Reagan's former national security adviser, retired Rear Adm. John Poindexter, is developing the database under the Total Information Awareness (TIA) program.

Poindexter was a player in the Iran-Contra investigation. He was convicted in 1990 on five counts of lying to Congress, making false statements, destroying documents and obstructing inquiries.

A Nov. 12 story in *The Washington Post* noted that "[Poindexter] was sentenced to six months in jail by a federal judge who called him 'the decision-making head' of a scheme to deceive Congress. The U.S. Court of Appeals overturned that conviction in 1991, saying Poindexter's rights had been violated through the use of testimony he had given to Congress after being granted immunity."

Even though the convictions were overturned, wouldn't you think someone charged with developing the most-sensitive public data warehouse ever would need to have a spotless past?

Apparently, Poindexter came up with this Dr. Strangelove-type scheme and managed to sell it to Aldridge and the Pentagon. It is some relief that Poindexter will only be in charge of development and not deployment.

According to Fox News, Aldridge said, "John has a real passion for this project." I'm sure he does. Can you say "megalomaniac"?

The key issues are simple. First, can such a system be built? I would suggest that it can't. Sure, a data management framework can be put together, but think of the scale of this project: The problems of reliability and data hygiene are insurmountable.

Secondly, the potential for abuse is enormous. If they succeed in building it, what would be considered an abuse of the database early in its life would, in time, become an acceptable use.

Initially, the database would be used for what it was intended — to identify terrorists. Then the CIA and FBI would get access for other reasons, such as fighting organized crime. Then the Bureau of Alcohol, Tobacco and Firearms and the Immigration and Naturalization Service will wheedle in for "sound reasons." And before we know it the Forestry Commission and Bureau of Land Management will be feeding at the trough.

Thankfully, some politicians are concerned TIA might be dangerous. Sen. Dianne Feinstein (D-Calif.) told the *San Jose Mercury News* that she "plans to introduce legislation to ensure that TIA does not infringe on the privacy rights of Americans."

I'm just afraid that if TIA gets off the ground, it will be on such a scale and get so much political backing that legislation such as Feinstein's will be ineffective in controlling Poindexter's monster.

Worried folks gather at backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

Readers get another turn

One last word of thanks before we move on to the gift-giving madness: Buzz truly appreciates *almost* all of you who take the time to send e-mail. . . . The exceptions know who you are.

Let's look the recent correspondence:

A number of writers piped up to clarify a column in which another reader had cited "The Zappa Crappa Factor" — namely that "90% of everything is crap."

"Sturgeon's Law, as it is known among programmers, was originally spoken by Theodore Sturgeon, and the original words were: 'Sure, 90% of science fiction is crud. Ninety percent of everything is crud,'" Don Rea offers. "Frank Zappa was a genius, to be sure, but he wasn't the originator of everything clever."

Relative to an item about the demise of Slingshot, another reader accuses Buzz of wielding a wide brush by lumping that former supplier of prepaid Internet access in with a company called BAMnet.

"BAMnet has a great concept — you pay 6.5 cents per minute of time used," David Hoerl says. "You can connect for 1 minute or 1,000 minutes — the rate is the same. There is no prepayment, up-front investment, or monthly charge — you get billed for what you use, period."

No disrespect was intended toward BAMnet.

A column about rampant tax cheating by online tobacco merchants and those of you who buy the cut-rate smokes drew howls from opponents of online taxes ("You'll kill the Internet"), and, of course, the hopeless nicotine addicts ("What about our rights?").

One of my favorites came from a New York butt fiend:

"Since you are so worried about the nonpayment of these outrageous taxes that you and the mayor seem to think that the people of New York should be paying because they choose to smoke, why don't you donate some of your salary to offset the losses? Until then, keep your opinion to yourself."

I tried explaining to her that keeping my opinions to myself would likely result in the loss of my salary, which in turn would keep me from contributing to the cause of the poor, beleaguered smoker. She didn't write back.

A September column criticized a new business by Go Daddy Software called Domains by Proxy because it will potentially render useless the already unreliable Whois database of Web site operator contact information. Reaction from those who put privacy ahead of accountability was predictable. There also were thornier issues raised, such as Whois being a spammer's delight . . . and this one:

"My 9-year-old daughter has a Web site with a really great domain name. She would like to post pictures of herself and her friends, but because of the Whois database, I have not allowed her to post anything that might allow her to be identified," Karen Anderson writes. "While I appreciate the expediency of being able to contact business-related domain owners directly, I also see a real need for privacy protection for kids."

A Buzz rant about pop-up ads brought out a surprising number of pop-up defenders, most of this ilk:

"I don't understand the problem," Paul Stafford writes. "Web sites, including yours, need some way to make money to keep publishing. Orbitz ads are pop-unders, not -overs, and go away with a single click. The ads are not offensive. They work, so Orbitz is likely to continue supporting online content. This benefits the very people who are complaining. If it is an insufficient trade-off for them, they always have the choice to stop patronizing the sites that sell pop-ups, or Orbitz, or both."

It's that last part that will be bring an end to pop-ups soon enough.

You, too, can be heard here. The address is buzz@nww.com.

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